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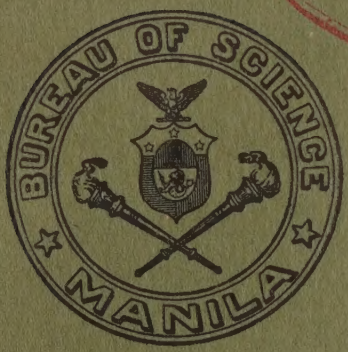

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A REVISION OF THE EASTERN ASIATIC MYRSINACEÆ [1]

By EGBERT H. WALKER

Of the Smithsonian Institution, Washington, D. C.

THIRTY-SEVEN TEXT FIGURES

INTRODUCTION

This revision of the eastern Asiatic Myrsinaceæ is the result of an intensive study made at the Smithsonian Institution during the past ten years. It was undertaken at the suggestion of Dr. E. D. Merrill, who had found the herbarium collections of this family everywhere in great confusion and the identification of the eastern Asiatic specimens by means of the available literature exceedingly unsatisfactory. It is based on the large herbarium collection in the United States National Herbarium, supplemented by many specimens borrowed from other institutions. No field studies, unfortunately, have been possible, studies which would have solved many of the unsettled problems that have arisen in the course of this work, and which would possibly have altered the concepts of some of these species. Because field work has been impossible, and because the types of some species could not be examined, this treatment is in many respects tentative and essentially conservative. The interpretation of species has been on a type basis whenever possible, but unfor-

[1] A dissertation submitted to the Board of University Studies of The Johns Hopkins University in conformity with the requirements for the degree of Doctor of Philosophy. Published with the permission of the Secretary of the Smithsonian Institution. Received for publication, November 28, 1939.

tunately the types deposited in European herbaria have rarely been available for study, and almost none of those deposited in Japanese institutions. However, a surprisingly large number of duplicates of these European types have been found in American herbaria. Uncertainties due to inability to examine authentic material have been clearly designated in this revision. Many of the species described by Japanese botanists are not thoroughly dealt with, because types and duplicates of types have very seldom been available; however, in order to correlate the relatively few Myrsinaceæ of Japan and Formosa with those of China, the former are included in this revision with as much completeness as is possible.

Some uncertainties exist in the species of China, because many of them occur also in southern Asia, whence they were first described and where there is still much confusion in this family. Rather recently separate treatments have been prepared of the Myrsinaceæ of Indo-China(48) and of Siam,(15) but none for Burma and India. The Chinese species, therefore, may need further revision after these treatments of the Myrsinaceæ of southern Asia have been better coördinated with each other and extended.

HISTORICAL REVIEW

The Myrsinaceæ were first proposed as a separate natural order, as the Myrsineæ, by Robert Brown in 1810.(4) In the same year A. L. Jussieu proposed the name Ardisiaceæ.(23) Alphonse DeCandolle published a review of the Myrsineæ in 1834,(5) followed by two supplementary papers (6, 7) and then by a treatment of the family in 1844 under the name Myrsineaceæ in DeCandolle's Prodromus.(8) The next important critical treatment of the family was the monograph by Dr. Carl Mez, published in 1902 in Das Pflanzenreich.(43)

The first treatment of the Myrsinaceæ from China, aside from these monographic works, was that by G. Bentham in 1861, in his Flora Hongkongensis.(1) The next was the enumeration, with several new species, in Forbes and Hemsley's Enumeration of the plants of China,(16) the Myrsinaceæ being published in 1889. In 1914 Prof. A. Rehder's treatment of E. H. Wilson's collections, including several new species, appeared in Sargent's Plantae Wilsonianae.(49) Many other new species have appeared in various publications since 1902, especially noteworthy being 41 species described by Father Hector Léveillé. The latter were critically treated by Prof. A. Rehder in 1934(50, 15) on

the basis of specimens determined in part by the present writer. In 1936 Dr. H. Handel-Mazzetti made critical notes on certain members of the family in his Symbolae Sinicae.(19) The writer has recently prepared an enumeration of the Myrsinaceæ of Yunnan for publication in Peking.(60)

The first reasonably certain printed record of any eastern Asiatic Myrsinaceæ is in A. Kaempfer's "Amoenitatum Exoticarum" (1712),(24) in which *Ardisia japonica* and *Ardisia crenata* Sims are described (24, pp. 775, 776) under the common names "jamma tadsi banna" and "fanna tadsi banna" respectively.[2] In 1791 Joseph Banks(25) published an excellent illustration by Kaempfer of an *Ardisia,* which may tentatively be considered as *A. crenata* Sims.[3] The first separate treatment of the Japanese species was that in P. F. Siebold and J. G. Zuccarini's Florae Japonicae Familiae Naturales,(55) the Myrsinaceæ having been issued in 1846. The family is also treated in Franchet and Savatier's Enumeratio Plantarum in Japonia Sponte Crescentium (1875) (17) and in many subsequent works on the plants of southern Japan and the adjacent islands to the south, most of them published in Japanese. The most complete enumeration is perhaps that in T. Makino and K. Nemoto's Nippon Shokubutsu Soran (Flora of Japan), (35) but the most useful is probably the treatment in T. Nakai's Trees and Shrubs Indigenous in Japan Proper;(45) both references are in Japanese. The best treatment of the Formosan species is in R. Kanehira's Formosan Trees,(26) also in Japanese. The nomenclature in all of these works is rather different from that used in this treatment, due in the first place to the use by the Japanese botanists of the older name *Bladhia* instead of the conserved name *Ardisia,* presumably because the Japanese do not recognize the Asiatic species as belonging in the same genus with the American species on which the genus *Ardisia* is based.[4] There is, thus, considerable confusion and lack of coördination in the various treatments of the Myrsinaceæ of eastern Asia, and a new revision is much needed.

[2] These were determined by J. G. Zuccarini in 1844 (64) as *Bladhia japonica* Thunb. and *B. crispa* Thunb., but are more likely as given above. Zuccarini also identifies an illustration by A. Cleyer published in 1689 (12) as possibly an *Ardisia,* but this identification seems too uncertain to merit consideration.

[3] *See* discussion following that species, p. 112.

[4] For further discussion *see* explanation following the description of *Ardisia,* p. 48.

GENERAL MORPHOLOGY

The Myrsinaceæ, with the single exception of *Ardisia primulifolia*, are woody plants. A few species, especially of *Ardisia* § *Bladhia*, have subherbaceous stems. Most of the Myrsinaceæ are shrubs, many are trees, and some are vines, especially the species of *Embelia*. The stems are all really indeterminate, although they appear to be determinate in certain species with "terminal" inflorescences. The leaves are usually alternate, rarely, in *Ardisia* § *Bladhia*, subverticillate due to restricted elongation of certain internodes. In the stemless and herbaceous *Ardisia primulifolia* they may doubtless be considered as whorled. In a few places in the family the leaves are distichous, this being the condition in the eastern Asiatic species only in *Embelia parviflora* and *E. polypodioides* and in some specimens of *Myrsine africana*. The leaves are almost without exception petiolate and pinnate-veined. The ends of the lateral nerves may or may not be joined together near the margin by marginal nerves or by bridging nerves.[5] The leaf margins are commonly entire, but numerous species have variously serrate edges, especially those in *Ardisia* § *Bladhia*. There are present in the leaf blades characteristic punctate glands of varying prominence and form, by which the species may often be differentiated, if great care be used. Also certain very characteristic albuminous or resinous marginal glands are important in distinguishing *Ardisia* § *Crispardisia*.

The inflorescences are axillary or merely lateral, or sometimes terminal, or at least apparently so, and thus are very variable in form, ranging from paniculate with subumbellate or racemose branches to fasciculate or subumbellate, axillary clusters. The pedicels are rarely wanting, notably so among eastern Asiatic species only in *Embelia sessiliflora*. Each pedicel is subtended by a bract. In the subumbellate, axillary, and greatly shortened inflorescences of certain species of *Embelia* and in *Myrsine* and *Rapanea* these bracts form a cluster of basal scales. The flowers of Myrsinaceæ are complete in certain genera and unisexual and dicœcious in others. It cannot be said with certainty that any are moncœcious, since the collector's data, upon which depends

[5] Mez stresses the difference between true marginal nerves and bridging nerves, but examination of many specimens has convinced the writer that it is not practical to differentiate between them, and both are referred to in this revision as marginal nerves.

much of our knowledge in this respect, have almost never given the necessary information. Probably monœcism does exist along with various degrees of sexuality in the flowers, as may be presumed from variations in the relative sizes of the functionless parts in dried unisexual flowers.

The flowers are typically 4- or 5-merous, though in one section of *Embelia* (not eastern Asiatic) they are 3-merous, and occasionally the number of parts may be six or more. The parts are usually symmetrical. Mez sometimes uses the asymmetry of the petals in his keys, but the writer has not found that practice feasible. The perianth lobes are united, imbricate, convolute, quincuncial, or rarely valvate, and the petals usually imbricate or convolute. The stamens may be attached to the base of the corolla tube or higher, but they are rarely if ever entirely free from the corolla. In some genera the filaments may also be united laterally into a short staminal tube, the condition in *Aegiceras*, which occurs in this area. The anthers are dorsally attached and dehisce introrsely by longitudinal slits or by apical pores, the latter being merely a modification of the former. In *Aegiceras* and *Ardisia elliptica* Thunb.[6] the anther cells are transversely septate. Punctate glands are common in various parts of the flowers and are very useful in differentiating species, especially glands occuring on sepals and backs or connectives of the anthers.

The ovaries are almost universally globose and 1-celled. An invariable characteristic of all Myrsinaceæ is the free, central, pulpy, basally attached placenta with few to many ovules. These are imbedded in the pulpy mass in all genera except *Maesa*, where they are not at all or only superficially imbedded. The ovules are usually campylotropous. The style is nearly always present and usually elongate, being very short in the eastern Asiatic genera only in *Rapanea*. The stigma is variable, but is more commonly punctiform. In *Myrsine* it is broad and fimbriate, but in *Rapanea* it is ligulate, at least in eastern Asiatic species. Nowhere in the Myrsinaceæ is it definitely divided, which, along with the lack of any other indication of divisions in the ovary, makes it very difficult to determine externally the number of carpels of which a pistil is composed. There are

[6] Mez confused this species with *A. humilis* Vahl, erroneously using the the latter name in his discussion of anthers in the introduction to his monograph. *A. elliptica* is not known from eastern Asia.

generally considered to be three or four carpels. The petals are usually free from pubescence, but frequently the sepals and rarely also the ovaries are variously hairy.

The fruits are almost invariably indehiscent, globose berries or drupes, but are occasionally ovoid, and in *Aegiceras* are much elongated, irregularly dehiscent capsules. In *Maesa* they are semi-inferior, crowned by the persistent sepal lobes and bases of the styles. Elsewhere the sepals are usually persistent, which makes consistent characteristics of the sepals especially useful in distinguishing species. The solitary seed, characteristic of all genera except *Maesa*, is usually more or less surrounded by a thin membranous testa derived from the originally pulpy placenta. In most mature seeds, except those of *Aegiceras*, there is an abundant albuminous endosperm, present even in this exception in immature seeds. In some species this albumen seems to have been partially absorbed at maturity.

DISTRIBUTION

The Myrsinaceæ occur in the tropical and subtropical parts of both hemispheres, the northernmost occurrence in the Old World being southern Korea and the southernmost station Victoria, Australia. In the New World they occur from southern Florida to Tucumán in Argentina. Only *Ardisia* and *Rapanea* occur in both hemispheres, according to Mez's interpretation of these genera. Some botanists do not follow Mez in transferring certain species of *Myrsine* to *Rapanea*, but leave the latter genus to the New World only. *Maesa*, *Embelia*, and *Myrsine* occur in the East Indies, southern Asia, and Africa. The Myrsinaceæ are predominantly species of tropical forests, but shrubby forms, especially some species of *Myrsine*, occur in more open areas. *Myrsine semiserrata* has been found in western Yunnan and eastern Tibet in protected side valleys at altitudes up to about 3,000 meters.

SYSTEMATIC POSITION AND SUBDIVISIONS

In the Linnæan system the genera now considered in the Myrsinaceæ were placed in the "pentandria monogynia." When the family was first established by Robert Brown in 1810 it contained *Myrsine* and *Aegiceras* with *Ardisia* as a synonym of the former. In DeCandolle's Prodromus(8) the family (there given as Myrsineaceæ) contained about the same genera as today, except that *Aegiceras* constituted a separate family, the Aegiceraceæ.

In Bentham and Hooker's "Genera Plantarum"(2) the family included *Aegiceras* and also *Theophrastus,* as it does also in the recent Hutchinson system.(22) In most systems the family is placed next to the Primulaceæ and the Theophrastaceæ, because of the similarity of the free central placentas with more or less imbedded ovules, and the presence of epipetalous stamens opposite to the lobes and equal in number with them in all these families. They are separated from the Primulaceæ by their woody habit, their 1-seeded fruits, except in *Maesa,* the absence of any staminodes alternating with the petals, and their frequently unisexual flowers. The Theophrastaceæ are closer to the Myrsinaceæ than are the Primulaceæ, but are separated in most systems by the several to many seeds and the presence of staminodes in addition to epipetalous and extrorsely dehiscing stamens.

The Myrsinaceæ are easily divided into two very distinct subfamilies, the Mæsoideæ and the Myrsinoideæ. The former have semi-inferior ovaries with many ovules and seeds and a pair of persistent bracteoles beneath each flower and fruit; the latter have superior ovaries with few to many ovules, but only one seed in each fruit, and no bracteoles. The Myrsinoideæ, at least in the Engler and Prantl system, are again divided into the Ardisieæ and the Myrsineæ, the former containing genera with several ovules in more than one whorl or series, such as *Ardisia, Aegiceras,* and others, the latter containing genera with only one series of few ovules, as *Embelia, Myrsine, Rapanea,* and others.

PRINCIPAL CHARACTERS AND METHODS USED IN THIS REVISION

The characters used in differentiating genera and species have been selected and tested on a large number of specimens. Exceptions have been duly noted in the descriptions and keys. The genera are rather easily separated on floral characters, but the species are usually better separated on vegetative characters. The type and degree of punctation in the leaves and floral parts are rather often used in this revision, but only after much careful checking on an abundance of herbarium material. Size of parts is also judiciously referred to. Vegetative characters have been used in the keys whenever possible, because these are the characters usually present in flowering, fruiting, and sterile specimens, and because, after all, keys are essentially tools for

identifying specimens. The species have been arranged according to their apparent relationships, not always following the sequence in the keys. Certain characters, such as punctation along the margins of certain leaves as used by Mez, or the number of ovules and their seriation as used by Pitard, are not used in this revision, either because they have not proved of sufficient constancy, or because they cannot be used successfully in studying dried specimens. Those who have from time to time described isolated new species of Myrsinaceæ have often used characters that are not significant when the whole complex of species is considered together. Hence, every species included in this revision has been redescribed according to a uniform pattern, even those which the writer himself has described separately in previous years. A great aid in the preparation of uniform and complete descriptions of species has been the use of printed blanks on which were first recorded the characters with their variations as observed in a collection of specimens considered to represent a species. With these descriptions thus drawn up on uniform blanks it was easy to compare the characters of similar species by placing them side by side, and to discover where the words selected proved inadequate properly to differentiate the species, or where the descriptions were indistinct or incomplete for some other reason. To supplement the formal descriptions, a paragraph is usually added, following the citation of specimens, giving the principal recognition characters. These supplementary notes are not substitutes for the formal descriptions and are to be used with great care or not at all by the casual student in identifying specimens. They are not substitutes for the keys and descriptions. New species and varieties are first briefly described in Latin, followed by more complete English descriptions, and are nearly always accompanied by drawings made by the writer, usually from the type specimen.

EXPLANATION OF CITATIONS

The abbreviations used in the citations of literature are those adopted in the bibliography by Merrill and Walker.(42) The commonly used abbreviation "Wall. Cat." has been discarded in favor of the more correct "Wall. List" in referring to N. Wallich, A Numerical List of Dried Specimens of Plants in the East India Company's Museum.(62) Although Index Kewensis, Suppl. IX (1938), refers to the second edition of Roxburgh's Flora Indi-

ca(53) as having been edited by Carey and Wallich, it is here referred to as Roxb. Fl. Ind. ed. Carey, it being assumed that Wallich's notes are additions, not editorial corrections.

The citations of specimens at the ends of the descriptions are complete for numbered specimens examined for this revision. Series distributed by various institutions in which the specimens of many collectors are included in one numbered sequence are attributed only to the institution in the citation of specimens after the descriptions, but the individual collectors are given in the assembled list of cited specimens. This distinction is important, because in the past specimens have sometimes been attributed to the individuals who collected them and sometimes to the institution in whose series they are numbered. Although Canton Christian College is now called Lingnan University, the older name is retained in this revision, partly because such a large portion of its specimens were collected under the earlier name, and in part because of the brevity of the initials C. C. C. used to designate these collections. The Canton Christian College's, or Lingnan University's, series was discontinued after reaching the number 20,000, the collectors for this institution after that each having his own separate series. There are many other examples of confusion in numbered series requiring double citation, such as the collections by J. Martin, J. Laborde, and others, which are numbered in the Bodinier series. These likewise are cited with only one name in the citations in the descriptions, but with both names in the assembled numerical list of cited specimens at the end of the revision.

The geographic subdivisions are generally given in the following sequence, beginning in the northeast and ending in the southwest: Japan, Bonin Islands, Liu Kiu Islands, Formosa, Korea, Manchuria, Chihli, Shantung, Shansi, Shensi, Kiangsu, Anhwei, Honan, Hupeh, Chekiang, Kiangsi, Hunan, Fukien, Hongkong, New Territories, Hainan, Kwangtung, Kwangsi, Kweichow, Szechwan, Yunnan. Precise localities are given only for types. This was necessary in the interest of brevity, because of the confusion that would result from lack of uniformity in the recording of local place names in their romanized form, and because of the writer's lack of knowledge of local geography in China. This lack may be overcome in respect to localities in Yunnan by referring to the writer's paper on The Myrsinaceæ of Yunnan(60).

The abbreviations used in designating the herbaria from which the cited specimens were obtained for study are:

A, Arnold Arboretum of Harvard University.
Am, Amoy University.
BM, British Museum, London.
Br, Brooklyn Botanic Garden.
C, University of California.
E, Royal Botanic Garden, Edinburgh.
F, Field Museum of Natural History, Chicago.
Fa, Fan Memorial Institute of Biology, Peking.
G, Gray Herbarium of Harvard University.
K, Royal Botanic Garden, Kew.
M, Missouri Botanical Garden.
NA, National Arboretum, Washington.
Ph, Academy of Natural Sciences, Philadelphia.
Su, Sun Yatsen University, Canton.
T, Tokyo Imperial University.
V, Naturhistorisches Museum, Vienna.
W, United States National Herbarium, Washington.
Y, New York Botanical Garden.

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The writer is deeply indebted to the directors of the above institutions for their kindness in lending to the Smithsonian Institution the large number of specimens needed for this study. The writer wishes to acknowledge especially his indebtedness to Dr. E. D. Merrill, Director of the Arnold Arboretum, for his unceasing help and encouragement throughout this study, and for his efforts to make available at the earliest possible opportunity the Myrsinaceæ from the large number of collections he has constantly been receiving from China during the period of these studies. Through the efforts of Doctor Merrill and of Dr. L. Croizat, also of the Arnold Arboretum, the writer was able to examine a very valuable collection of fragments and photographs of types of Pitard's Indo-China specimens. Prof. A. Rehder kindly made available for this study a very valuable collection of fragments, duplicates, and types from the Léveillé herbarium, which is now at the Royal Botanic Garden, Edinburgh, these fragments being deposited at the Arnold Arboretum. The writer is also much indebted to the late Dr. W. H. Brown [7] for

[7] Died November 9, 1939.

his guidance and encouragement and for the arrangements made shortly before his untimely death for the publication of this revision, and to the editor of the Philippine Journal of Science for accepting it for publication.

MYRSINACEÆ [8]

Flowers perfect, monœcious or dicœcious, 4- or 5-, rarely 6-merous; calyx usually gamosepalous, persistent; corolla usually gamopetalous; stamens sometimes free, but usually adnate to base or throat of corolla tube opposite the lobes, anthers dorsally attached, dehiscing introrsely and longitudinally by slits, or sometimes by pores; ovary superior except in *Maesa* where it is semi-inferior, 1-celled, with basally attached, free, central placenta, and many or few anatropous or semicampylotropous, usually imbedded ovules; style single, long or short; stigma single, usually undivided, sometimes lobed or fimbriate; fruit an elongated capsule, as in *Aegiceras*, or a globose drupe or berry, 1-seeded in all eastern Asiatic genera except *Maesa*, the embryo covered by the fleshy or horny endosperm.

Shrubs, trees, or vines, rarely subherbaceous, leaves simple, usually alternate, rarely opposite or subverticillate, without stipules, usually with variously distributed resinous glands or lines, these sometimes obscure; inflorescences axillary or terminal, paniculate, racemose or fasciculate, flowers usually small, white to reddish.

Tropical or subtropical regions of both hemispheres. Six genera in China.

Key to the genera of the eastern Asiatic Myrsinaceæ.

a [1]. Ovary and fruit semi-inferior, with a pair of bracteoles at base or on pedicel; seeds numerous, angular..... 1. ***Maesa.***

a [2]. Ovary and fruit wholly superior, without bracteoles; seed solitary, globose.

b [1]. Fruit an elongated capsule; anther cells transversely septate. 2. *Aegiceras.*

[8] The Japanese botanist Takenoshin Nakai (45, p. 272) has adopted the name Ardisiaceæ, first used by A. L. de Jussieu (23) in 1810. However, *Myrsine* Linn. is the oldest recognized genus, (33, p. 196) and article 23 of the International Rules of Botanical Nomenclature, (52, p. 10) Cambridge, 1930, states that "names of families are taken from the name or former name of one of their genera and end in *-aceæ*." There seems, therefore, no reason to change Myrsinaceæ, based on *Myrsine* Linn. This name was apparently first used by Lindley in 1836. Previously Myrsineæ had been used by Robert Brown (4, p. 532) by DeCandolle (5, p. 95) and by others.

b^2. Fruit a globose drupe or berry; anther cells not septate.
c^1. Corolla lobes contorted in bud; flowers perfect, stigma never ligulate ..... 3. *Ardisia.*
c^2. Corolla lobes imbricate or valvate, not contorted; flowers unisexual, or if perfect, stigma ligulate.
d^1. Inflorescences manifestly elongate, not subfasciculate or subumbellate, or if so, abbreviated, leaves distichous or inflorescence on special more or less leafy branches..... 4. *Embelia.*
d^2. Inflorescences subfasciculate or subumbellate on short scaly branches, leaves never distichous.
e^1. Stigma spreading, flattened and fimbriate or apiculate; style elongate ..... 5. *Myrsine.*
e^2. Stigma ligulate; style very short or wanting..... 6. *Rapanea.*

1. Genus MAESA Forsk.

Maesa Forsk., Fl. Aegypt. Arab. (1775) cvi, 66. Based on *Maesa lanceolata* Forsk. from Yemen, Arabia.
Doraena Thunb., Nov. Gen. Pl. 3 (1783) 59; Fl. Japon. (1784) 84. Based on *Doraena japonica* Thunb.
Baeobotrys J. & G. Forst., Char. Gen. Pl. (1776) 21, *pl. 11.* Based on *Baeobotrys nemoralis* J. & G. Forst., from the New Hebrides.
Dartus Lour., Fl. Cochinch. (1790) 123; ed. Willd. (1793) 152. Based on *Dartus perlarius* Lour., described from Cochin China. The type has not been located [*see* Merrill's discussion.(40)].

Flowers perfect or unisexual, 2 to 4 mm long, 5-merous, subtended by a pair of bracteoles on pedicel or at its summit; calyx adnate to lower half or more of ovary, the lobes valvate, persistent; petals united from $\frac{1}{2}$ to $\frac{4}{5}$ their length into a tube, usually dark glandular-lined; stamens attached to corolla tube, the filaments distinct, elongate, about equalling the ovate or reniform anthers, included or rarely barely exerted, dehiscing by slits; pistil with semi-inferior ovary, the ovules many on a globose central placenta, the style cylindrical, slender, scarcely equaling corolla tube or shorter, the stigma entire or 3- to 5-lobed; fruit a globular or ovoid, more or less fleshy berry, usually crustaceous, surmounted by the persistent style or its base, the apex more or less covered by the persistent sepals, generally longitudinally lined; seeds numerous, angular, immersed in the hollows in the placenta and arranged around it with flat faces.

Small trees or erect or straggling shrubs; leaves entire or dentate, glabrous or pubescent, frequently with resinous or glandular striations; inflorescences axillary or lateral, racemose or paniculate.

Species about 100, chiefly in tropical parts of the Old World, a few in Australia and in the Pacific Islands, about 4 in Africa, 17 in eastern Asia.

Key to the eastern Asiatic species of Maesa.

a^1. Corolla tube 2 to 3 times as long as lobes; stems and inflorescences sometimes densely pilose or hirsute, the bracteoles sometimes broadly ovate or reniform, distinctly dark glandular-striate.
  b^1. Stems and branches of inflorescence pilose.
    c^1. Sepals glabrous; leaves membranous, finely glandular-lined above. 1. *M. argentea.*
    c^2. Sepals pilose; leaves thick-membranous or chartaceous, not conspicuously glandular-lined above.
      d^1. Inflorescence 4 cm long or less ..... 2. *M. permollis.*
      d^2. Inflorescence 4 cm long ..... 2*a*. *M. permollis* var. *effusa.*
  b^2. Stems and branches of inflorescence not pilose.
    c^1. Leaves narrowly oblong-lanceolate, rugose, entire. 3. *M. salicifolia.*
    c^2. Leaves ovate or elliptic-lanceolate, not rugose, generally more or less serrate.
      d^1. Leaf blades chartaceous or coriaceous, usually remotely and acutely serrate; bracteoles broadly ovate or reniform, usually distinctly dark glandular-striate..... 4. *M. japonica.*
      d^2. Leaf blades membranous, subentire or minutely dentate; bracteoles ovate or oblong..... 5. *M. macilenta.*
a^2. Corolla tube about equaling lobes; stems and inflorescences sometimes hirsute or pilose, bracteoles never reniform, not dark glandular-striate, if glandular-lined, only sparsely so.
  b^1. Branchlets, inflorescences, and usually sepals hirsute or pilose.
    c^1. Leaves rough-hirsute on upper surface; branchlets densely hirsute. 6. *M. insignis.*
    c^2. Leaves not rough-hirsute on upper surface; branchlets glabrous or hirsute but not densely so.
      d^1. Sepals ciliate, usually hirsute; leaves generally under 10 cm long; inflorescences 2 to 4 cm long, or if longer, leaves 4 cm long or less; eastern.
        e^1. Leaves about 9 cm long, coarsely serrate above middle. 7. *M. perlarius.*
        e^2. Leaves 4 cm long or less, undulate to serrate, with small, callose teeth extending below middle..... 8. *M. parvifolia.*
      d^2. Sepals subciliate or entire, rarely hirsute; leaves generally 12 to 16 cm long or longer; inflorescences 2 to 10 cm long; western ..... 9. *M. montana.*[9]

[9] Specimens of *Maesa argentea* without evident corolla tubes may be distinguished from *M. montana* by their glandular-striate upper leaf surfaces and rather thick, pilose stems.

b ². Branchlets, inflorescences, and sepals glabrous.
c ¹. Leaf blades rugose (except in immature leaves), the apices truncate or slightly retuse ..... 10. *M. rugosa.*
c ². Leaf blades smooth, not rugose, the apices neither truncate nor retuse.
d ¹. Leaves without fine, nervelike, glandular lines.
e ¹. Leaf blades broadly elliptic-ovate, entire or shallowly dentate, the inflorescences terminal and axillary.... 16. *M. Balaneae.*
e ². Leaf blades not broadly elliptic-ovate, or if so, serrate, the inflorescences axillary only, or if terminal and axillary, the leaves lanceolate.
f ². Leaves membranous and entire or nearly so, or coriaceous, remotely serrate.
g ¹. Blades membranous, entire; pedicels slender, distinctly longer than fruits, the latter with subconical bases. 11. *M. acuminatissima.*
g ². Blades coriaceous, remotely serrate or entire; pedicels not longer than fruits, latter without conical bases. 12. *M. ramentacea.*
f ². Leaves chartaceous, distinctly and regularly serrate.[10]
g ¹. Eastern; leaves 8 to 13 cm long, elliptic-ovate. 13. *M. tenera.*
g ². Western; leaves 10 to 23 cm long, elliptic- or oblong-lanceolate to ovate or broadly ovate..... 9. *M. montana.*
d ². Leaves with nervelike glandular lines; entire to denticulate or dentate, rarely distinctly serrate, never remotely so.
e ¹. Leaves lanceolate .....14. *M. hupehensis.*
e ². Leaves ovate or elliptic-ovate.
f ¹. Leaf blades broadest at middle, elliptic-ovate.
g ¹. Veinlets not evident beneath, blades membranous. 15. *M. membranacea.*
g ². Veinlets evident and more or less reticulate beneath, blades chartaceous.
h ¹. Stems not thick and angled, inflorescences axillary and terminal, 7 to 18 cm long, leaf blades generally rounded or nearly so at base..... 16. *M. Balansae.*
h ². Stems generally somewhat thick and more or less angled; inflorescences axillary only, rarely up to 7 cm long; leaf blades generally obtuse at base.... 17. *M. indica.*
f ². Leaf blades broadest below middle, ovate (not elliptic-ovate).
g ¹. Leaves entire, obtuse at base..... 18. *M. consanguinea.*
g ². Leaves shallowly dentate, truncate at base. 19. *M. laxiflora.*

1. MAESA ARGENTEA (Wall.) A. DC. Text Fig. 1.

Baeobotrys argentea WALL. in Roxb., Fl. Ind. ed. Carey 2 (1824) 233. Based on *Wallich 2316* from western or central Himalaya. A pho-

[10] Glabrous specimens of *M. montana* are often very difficult to separate from *M. tenera* by key characters. For more complete characterization *see* the descriptions and discussions, pp. 28 and 34.

tograph and fragment of the type in the Delessert herbarium have been examined.

Maesa argentea A. DC., Ann. Sci. Nat. II Bot. 16 (1841) 96. *pl. 5.* Based on *Baeobotrys argentea* Wall. In his transfer of *Baeobotrys* to *Maesa* DeCandolle does not mention *Baeobotrys* (*Maesa*) *argentea* Wall., but in the text he mentions that these two genera are the same. This name has usually been given erroneously as *Maesa argentea* Wall.

FIG. 1. *Maesa argentea* (Wall.) A. DC. *a*, branchlet with fruiting inflorescences, × ⅔; *b*, fruit, × 1⅓. Drawn from *Forrest 15974* (*K*).

A shrub up to 1 m high, the branchlets rather thick, pilose; leaves petiolate (about 2 cm), the blade membranous, ovate or

elliptic-ovate, obtuse at base, acuminate at apex, about 16 cm long, 7 cm wide, coarsely serrate-dentate, glabrous above except on the prominent nerves, pilose beneath especially on the nerves, finely and abundantly retiform-glandular-lined, the lateral nerves about 8 pairs, ending in the teeth; inflorescences axillary, compact-racemose or paniculate, 1 to 4 cm long, the axis pilose, the bracts lanceolate, about 1 mm long, nearly equaling the pedicels, puberulent; flowers about 3 mm long, on pedicels scarcely over 1 mm long, the bracteoles ovate, acute, generally glabrous; calyx lobes ovate, obtuse, about 1 mm long, thin, entire, glabrous, glandular-striate; corolla nearly 3 mm long, the lobes about $\frac{1}{3}$ the length of the tube, suborbicular, glandular-striate; stamens in female flowers reduced, included, shorter than tube, the filaments slender; pistil with short, cylindrical style, the stigma lobed or divided; fruit ovoid, 3 to 4 mm in diameter, pinkish, glandular-striate, the sepals nearly meeting at apex.

Yunnan and Szechwan to central and western Himalayas.

SZECHWAN: *Handel-Mazzetti 1185 (V)*.

YUNNAN: *Forrest 7795 (Su, W), 8294 (E, Su), 15974 (E, K), 26188 (K, W); Handel-Mazzetti 1185 (W), 6294 (V); Rock 7199 (W); H. T. Tsai 53097 (A, W), 55988 (A, W); Y. Tsiang 12209 (Su); C. W. Wang 72349 (A, W), 72500 (A, W)*.

This species is recognized by its long corolla tubes, more or less pilose stems and inflorescences, glabrous sepals, and membranous leaves, finely glandular-lined above.

2. MAESA PERMOLLIS Kurz.

Maesa permollis KURZ, Journ. Asiat. Soc. Bengal 40[2] (1871) 66. Based on a collection by Doctor Brandis from Thoungyeen, Martaban, Burma. The type has not been seen.

A stout, climbing shrub 2 to 3 m high,[11] the branches rather few, somewhat thickened (or ultimate branchlets rather slender), densely pubescent with rufous stiff hairs almost throughout; leaves petiolate (0.3 to 2.5 cm), the blade membranous to chartaceous, elliptic-, oblong-, or broadly obovate, rounded or obtuse at base, obtuse, acute, or acuminate at apex, about 25 cm long, 12 cm wide, ranging from 12 to 30 cm long, 4 to 18 cm wide, distinctly sinuate- or serrate-dentate with callose teeth, green and glabrous or nearly so above, brownish and densely pilose or hirsute beneath especially on nerves, the midrib prominent, lateral nerves about 10 pairs, terminating in the teeth; inflores-

[11] *C. W. Wang 76773* is reported to be 6 m high.

cences axillary, subglomerate or racemose or subpaniculate, shorter than petiole or up to 4 cm long, rather many-flowered, densely hirsute; flowers white, about 3 mm long, on short pedicels (scarcely 1 mm), the bracteoles minute; calyx lobes equaling tube, ovate, acute, densely hirsute or pilose, the margin narrowly scarious; corolla tubular-campanulate, glabrous, the tube about 2 mm long, lightly lined or smooth, the lobes about $\frac{1}{3}$ length of tube, ovate, rounded, more or less spreading; stamens included, attached within the tube, the filaments short, the anthers broadly elliptical, about equaling filaments; pistil with short, thick style, the stigma indistinctly lobed; fruit ovoid, acute or apiculate at apex, about 4 mm long, reddish, densely hirsute.

Yunnan to Burma, Siam, and Indo-China.

YUNNAN: *Forrest 29394* (*W*); *Henry 9649* (*A, K, W, Y*), *9649A* (*K*), *9649B* (*K*), *11707* (*A, K, W, Y*), *11707A* (*A, W*), *11707B* (*A, K, Y*), *11707C* (*A, K*), *11707D* (*A, K, Y*); *Rock 2580* (*A, C, W*); *H. T. Tsai 60557* (*A, W*), *60580* (*A, W*), *61374* (*A, W*); *C. W. Wang 76187* (*A, W*), *76418* (*A, W*), *76773* (*A*), *77090* (*A, W*), *79739* (*A, W*).

This species is rather easily distinguished by its long corolla tubes, its densely hirsute inflorescences, and its broad leaves hirsute on the lower surface.

2a. MAESA PERMOLLIS var. EFFUSA Walker.

Maesa permollis var. *effusa* WALKER, Journ. Washington Acad. Sci. 27 (1937) 203, *fig. 4*. Based on *Forrest 12143* from Yunnan in the Edinburgh herbarium.

A shrub 3 to 8 m high, differing from the typical form of the species in the strongly paniculate inflorescences, up to 9 cm long.

YUNAN: *Forrest 12143* (*E, K*), *13637* (*E, K*).

3. MAESA SALICIFOLIA Walker. Text fig. 2.

Maesa salicifolia WALKER, Journ. Washington Acad. Sci. 21 (1931) 480, *fig. 2*. Based on *Canton Christian College* (*Levine* and *Groff*) *45* from Teng Woo Mountain, Kwangtung, at the New York Botanical Garden.

An erect shrub 2 meters high, glabrous throughout, the branchlets rather slender, grayish-brown; leaves with channeled petiole (5 to 8 mm), the blade coriaceous, narrowly oblong-lanceolate, obtuse at base, slenderly acute or acuminate at apex, 10 to 18 cm long, 1.5 to 2 cm wide, strongly revolute and entire on margin, rugose, the midrib and the 5 to 7 pairs of lateral,

curved-ascending nerves deeply impressed above, correspondingly raised on ridges beneath, veinlets inconspicuous; inflorescences axillary, racemose or paniculate, with a few branches near base, solitary or 2 or 3 together, 1.5 to 2 cm long; flowers 3 to 4 mm long, slightly longer than pedicels, the bracteoles broadly ovate, obtuse, sometimes broadly so; calyx lobes imbricate, broadly ovate to suborbicular, broadly obtuse or rounded, about 1 mm long, glandular, the margin thinner; corolla tubular or tubular-campanulate, tube 3 to 4 mm long, about 3 times

FIG. 2. *Maesa salicifolia* Walker. *a*, branchlet with inflorescences, × ½; *b*, flower with corolla removed, × 6; *c*, corolla, opened, with stamens, × 6. Drawn from the type, *C. C. C. 45* (Y).

length of sepals, longitudinally glandular-lined, the lobes short-ovate, rounded, scarcely spreading; stamens in male flowers included, attached at or above middle of corolla tube, anthers oblong-ovate, rounded at apex, about equaling the slender filaments; pistil with free part of ovary conical, the style slender, scarcely reaching height of anthers, the stigma slightly dilated or obscurely lobed; fruit globose, 4 mm in diameter, reddish, longitudinally striate-punctate, wrinkled, the persistent sepals nearly meeting about the more or less persistent style.

KWANGTUNG, Teng Woo Mountain: *C. C. C. 45* (*Y*), *6386* (*Y*), *13242* (*C, NA*); *H. T. Ho 60026; S. Y. Lau 20361* (*Y*); *R. Mell 266* (*A*).

This species differs from the others with long corolla tubes in its narrowly lanceolate, entire, rugose leaves. In floral characters it is almost indistinguishable from *Maesa japonica*. It is significant that botanists who visit the famous monastery on Teng Woo Mountain so often bring back specimens of this species, but it has not been found in collections from elsewhere.

4. MAESA JAPONICA (Thunb.) Moritzi.

Doraena japonica THUNB., Nov. Gen. Pl. 3 (1783) 59; Fl. Japon. (1784) 84. This is the type species of the genus. The type specimen, which has not been seen, is probably in the Thunbergian herbarium in Upsala, Sweden.

Maesa Doraena BLUME in Sieb. & Zucc., Abh. Bayer. Akad. Wiss. Math. Phys. 4^3 (1846) 138. Based on *Doraena japonica* Thunb.

Maesa coriacea CHAMP., Journ. Bot. Kew Misc. 4 (1852) 300. Originally described from Hongkong without mention of specimens.

Maesa japonica MORITZI, in Zoll. Syst. Vers. Ind. Arch. 3 (1885) 61. Based on *Doraena japonica* Thunb.

Maesa japonica var. *elongata* MEZ (in part) in Engl., Pflanzenreich 9 (IV.236) (1902) 51. Based on *Henry 666, 7124, 7757, 7920;* and *Lamont 415* from Hupeh, Szechwan, and Chekiang. Duplicates of *Henry 7124, 7757, and 7920* have been seen.

Pieris oligodonta LÉVEILLÉ, Bull. Soc. Bot. France 54 (1907) 389. Based on a collection by J. Esquirol from Kweichow, in the Léveillé herbarium and referred by the writer to *Maesa japonica* (Thunb.) Moritzi.(50, 15, p. 289)

Maesa Labordei LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 462. Based on a collection by J. Laborde in the Bodinier series no. *2513* from the environs of Tsin-gay, Kweichow, in the Léveillé herbarium. The type has been examined.

Maesa Esquirolii LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 462. Based on *J. Esquirol 1572* from Hoang Tsao Pa, Kweichow, in the Léveillé herbarium. A fragment of the type has been examined.

Maesa Cavaleriei LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 462. Based on a collection by Cavalerie from Tou Yun, Kweichew, November 10, 1899, in the Léveillé herbarium. A fragment of the type has been examined.

Maesa Dunniana LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 463. Based on *Cavalerie 459* from Pin Fa, Kweichow. A duplicate has been examined.

Myrsine Esquirolii LÉVEILLÉ, Repert. Sp. Nov. Fedde 12 (1913) 186. Based on *J. Esquirol 2625* from Kweichow. A photograph and fragment have been examined.

A shrub, sometimes scandent, 1 to 3 m high, or a small tree occasionally up to 5 m [*ex H. H. Chung 1279*], glabrous throughout, the branchlets rather slender, grayish; leaves with grooved petiole (5 to 13 mm), the blade coriaceous or thin-coriaceous, generally elliptic, quite variable from narrowly elliptic-lanceolate to obovate or oblong-ovate, attenuate, obtuse or sometimes rounded at base, attenuate-acuminate or acute or obtuse at apex, about 10 cm long, 3 cm wide, ranging from 5 to 16 cm in length, 2 to 5 cm wide, entire toward base or throughout or remotely and acutely serrate above middle with mucronate teeth, shiny and dull green above, paler beneath, the lateral nerves 5 to 8 pairs, inconspicuous, ending in the teeth; inflorescences axillary, usually solitary, sometimes 2 or 3 together, racemose- or racemose-paniculate, with a few branches near base, 1 to 3 cm long, glabrous; flowers 3 to 5 mm long, on pedicels usually slightly longer, the bracteoles broadly ovate to reniform, rounded or broadly obtuse, distinctly dark-glandular, frequently encircling pedicel and clasping base of calyx; calyx lobes imbricate, 1 to 1.5 mm long, ovate to orbicular, very obtuse or rounded, usually strongly glandular, the margin thinner; corolla tubular-campanulate, the tube about 3 to 4 mm long, glandular-lined, the lobes about $\frac{1}{3}$ length of tube, ovate, rounded, more or less spreading; stamens included, attached to sides of tube, about 1 mm long, the filaments equaling oblong or ovate anthers; pistil with free part of ovary conical, the style slender, scarcely reaching height of anthers, the stigma lobed; fruit globose or ovoid, about 4.5 mm long, strongly glandular-lined, the exposed part of ovary short, elongated by conical base of persistent style.

Japan to Indo-China and Yunnan.

JAPAN: *Faurie 4829 (A), 5530 (A); Kyushu Imp. Univ., Herb. 1641 (W); Oldham 552 (G); Price 1455 (K); Savatier 800 (W); K. Shiota, Herb. (Okada, Yoshishise) 3222 (A), (Misima, Kentaro) 3917 (A), 3921 (A), 6028 (A), 8511 (A); Wilson 6047 (A, W), 6312 (A), 6560 (A).*

FORMOSA: *Gressitt 412 (Y); Henry 126 (A, Y), 126A (A, Y), 461 (W); R. Kanehira & S. Sasaki 27 (T); T. Kawakami & U. Mori 3547 (T); T. Kawakami, U. Mori & G. Nakahara 1352 (T); E. Matuda 259 (T), 4283 (T); Warburg 9393 (K)*[12]*; Wilson 9944 (A, K), 10142 (A, K).*

[12] This number in the Vienna herbarium is *M. tenera.*

ANHWEI: *Ching 3151 (A, W); K. K. Tsoong 55 (Y).*

HUPEH: *Henry 3457 (W), 3804 (G, W, Y), 4563 (Y),*[13] *7757 (A, G, W); Wu-han Univ., Herb. Nat. (Chow, Ho-ch'ang) 285 (A, Y), 1794 (A, Y).*

CHEKIANG: *Ching 1857 (C, W), 2004 (A, C, W); H. H. Hu 159 (A, K), 218 (A), 1527 (A); Y. L. Keng 40 (Am), 743 (A, C); Nanking, Herb. Univ. 3471 (C, W, Y) 7304 (C), 14687 (A, W).*

KIANGSI: *Bullock 200 (W); Gressitt 1616 (A); H. H. Hu 888 (A), 948 (A); S. K. Lau 4000 (A), 4383 (A, W), 4686 (A); Y. Tsiang 10064 (Su, Y), 10309 (Su, Y), 10409 (Su, Y); Y. Tsiang 13294 (Su).*

HUNAN: *C. S. Fan & Y. Y. Li 100 (A); Handel-Mazzetti 464 (A), 11420 (V), 12739 (V); W. T. Tsang 23398 (A, W), 23611 (A, W).*

FUKIEN: *Luetta Chen 83 (A), Chung 930 (Am, C), 1279 (Am, C), 2266 (Am, C), 3367 (A, Am), 6649 (A), 6900 (A), 7005 (A), 8562 (A); Fukien Christ. Univ. 1593 (C), 5756 (M), 5808 (A), 6783 (A, C), 7002 (M), 9684 (M); Hongkong Bot. Gard., Herb. 2890 (A); Warburg 5776 (A).*

HONGKONG: *W. Y. Chun 5199 (C), 5215 (C), 5232 (C); Sargent,* November 3, 1903 *(A); Y. Tsiang 285 (A, C); Wilford (G, Ph), Wright 200 (G. W).*

HAINAN: *S. K. Lau 25757 (A, W), 26369 (A, W); C. Wang 35561 (Y).*

KWANGTUNG: *C. C. C. 142 (F), 1358 (A), 2792 (NA), 3310 (A, M, NA), 6994 (NA), 10235 (NA), 12081 (C, NA, W), 12089 (C, NA, W); 14047 (NA), 14895 (C, NA), 15025 (C, NA); W. Y. Chun 5606 (A), 5621 (A), 5630 (A), 5684 (A), 5766 (C), 5796 (A), 5869 (C); Gressitt 1386 (A); S. K. Lau 807 (A), 914 (A), 2261 (A), 25241 (W); Merrill 10235 (NA), 10698 (C, NA, Y); Y. W. Taam 425 (A); W. T. Tsang 20020 (A, Y), 20103 (Y), 20944 (Y), 21506 (A, Y); Y. Tsiang 59 (C), 1242 (A, C), 5199 (A); C. L. Tso 20609 (Y); T. M. Tsui 839 (A, Y); Y. K. Wang 423 (A).*

KWANGSI: *Ching 5825 (A), 6259 (A, W, Y), 8385 (W, Y); Z. S. Chung 81523 (A); S. K. Lau 28472 (A, W), 28653 (A, W); H. Y. Liang 65864 (W); W. T. Tsang 22872 (A), 23186 (A).*

[13] Mez cites this specimen as *Faber 4563*, apparently an error due to the distribution of Faber's collections by Henry.

KWEICHOW: *Bodinier 2513; Cavalerie 459* (*A, K, Y*); *Cavalerie*, November 10, 1899 (*A, E*); *Esquirol 1572* (*A, Y*), *2625* (*A*); *Handel-Mazzetti 203* (*A*), *10645* (*V*); *Steward, Chiao & Cheo 762* (*A, Y*); *S. W. Teng 90163* (*A, W*); *Y. Tsiang 4142* (*W*), *4760* (*W*), *5194* (*A, W*), *5635* (*W*), *6282* (*W*), *7132* (*W*), *7133* (*W*), *7502* (*W*), *7694* (*W*), *7697* (*W*), *7758* (*W*), *C. Wang 40232* (*A*), *40570* (*A*).

SZECHWAN: *W. P. Fang 5627* (*A*), *5629* (*A*), *5825* (*A*); *Schneider 663* (*A*).

YUNNAN: *Henry 4563* (*Y*), *11348* (*A, K, Y*);[14] *H. T. Tsai 51459* (*A*), *51486* (*A*), *51590* (*A*), *51614* (*A*), *51656* (*A*), *51759* (*A*).

This species is distinguished by the elongate corolla tubes and the broadly ovate to reniform and distinctly dark-glandular bracteoles which encircle the pedicels and clasp the bases of the flowers and fruits.

Maesa japonica var. *elongata* Mez was based upon five specimens from China, namely *Henry 665, 7124, 7757,* and *7920,* and *Lamont 415.* The first number has not been seen. Specimens of the second and fourth at Kew are *Maesa hupehensis* Rehd. *Henry 7757* at the Gray Herbarium, the Arnold Arboretum, and the United States National Herbarium are *Maesa japonica* (Thunb.) Moritzi. Dr. E. P. Metcalf, at the writer's request in 1931, kindly examined *Lamont 415* at the British Museum, and from his notes and drawings it appears that the latter is indistinguishable from true *M. japonica.*

5. MAESA MACILENTA Walker. Text fig. 3.

Maesa macilenta WALKER, Journ. Washington Acad. Sci. 21 (1931) 479, *fig. 3.* Based on *Henry 11704A* from Szemao, Yunnan, in the United States National Herbarium.

A shrub 1.5 to 2 m high, the branchlets slender, glabrous, or minutely puberulent; leaves petiolate (0.5 cm), the blade thin-membranous, ovate to elliptic-lanceolate, acute or rounded at base, long-acuminate at apex, 10 to 20 cm long, 3.5 to 5 cm wide, subentire or minutely sinuate-dentate, dull green on both sides, glabrous, striate with glandular lines, the lateral nerves 7 or 8 pairs; inflorescences axillary, racemose or sparingly branched-paniculate, 1 to 2.5 cm long, very minutely puberulent, bracts

[14] This specimen differs from the others in its much narrower, lanceolate leaves, suggestive of *Maesa salicifolia* Walker, but differing in not being rugose. It might, if additional specimens be collected, become the basis of a recognizable variety.

subulate, nearly equaling short pedicels; flowers 2 mm long, the bracteoles ovate or oblong; calyx lobes ovate, obtuse, entire, sometimes very minutely ciliate, not conspicuously glandular; corolla tubular-companulate, the tube twice as long as sepals, the lobes about $\frac{1}{3}$ length of tube, rounded, irregularly margined, longitudinally lined; stamens in male flowers unknown, in female flowers minute, included, the anthers ovate; pistil shorter than corolla tube, the free part of ovary conical, the style slender, less than 1 mm long, the stigma obscurely lobed; fruit unknown.

FIG. 8. *Maesa macilenta* Walker. *a*, branchlet with inflorescences, × ½; *b*, flower, × 10. Drawn from the type, *Henry 11704* (*W*).

Yunnan only.

YUNNAN, Szemao: *Henry 11704* (*K, Y*), *11704A* (*K, W*).

This species with long corolla tubes may be distinguished from *Maesa japonica* by its membranous leaves, its small inflorescence and flowers, and its ovate bracteoles, which are not broad and clasping. From *Maesa salicifolia* Walker it is distinguished by its ovate or elliptic-lanceolate (not narrowly lanceolate) leaves, these thin and membranous, not coriaceous and rugose, and by its ovate bracteoles.

6. **MAESA INSIGNIS** Chun. Text fig. 4.

Maesa insignis CHUN, Sunyatsenia 2 (1934) 81, *pl. 20.* Based on *C. Wang 32289* from Sunyi, Hopsui, Kwangtung, in the Sun Yatsen University herbarium. A duplicate has been examined.

Maesa hirsuta WALKER, Papers Michigan Acad. Sci. 20 (1935) 232, *pl. 50.* Based on *Y. Tsiang 4405* from Si-mi yao, Pa-na, Chengfeng Hsien, Kweichow, in the herbarium of H. Handel-Mazzetti in Vienna.

A shrub 1.5 to 4 m high, hirsute throughout especially on the slender branchlets; leaves with densely hirsute petioles (scarcely 5 mm), the blade membranous or chartaceous, elliptic-ovate, rounded at base, acute at apex with long-acuminate or subcaudate tip, 15 to 19 cm long, 6 to 7 cm wide, coarsely serrate with sharp triangular teeth, dull green above, slightly paler beneath, scabrous-hirsute on both surfaces especially beneath and on slender raised midrib, the lateral nerves about 10 pairs, branching, ending in the teeth; inflorescences axillary, racemose, about 6 cm long, the peduncle hirsute; flowers about 2 mm long on slender, hirsute pedicels (5 mm), the bracteoles near middle of pedicels in fruit, narrowly lanceolate, hirsute; calyx lobes triangular-ovate, acute, nearly 2 mm long, hirsute, neither punctate nor prominently glandular-striate; corolla 3 mm long, the lobes about equaling tube, suborbicular, glandular-striate, glabrous; stamens in female flowers reduced, in male flowers included, inserted in upper part of corolla tube, the filaments short, the anthers broadly ovate, not glandular; pistil with 4-lobed or divided stigma; fruit ovoid, apiculate, about 5 mm long, whitish when fresh, yellowish when dry, hirsute, rather obscurely glandular-striate.

Southern China.

KWANGTUNG: *C. Wang 32289* (*W*).

KWANGSI: *Steward & Cheo 315* (*A, Y*); *C. Wang 41002* (*A, W*).

KWEICHOW: *S. W. Teng 90578* (*A*); *Y. Tsiang 4405* (*V, W*), *4622* (*W*), *4768* (*W, Y*).

YUNNAN: *H. T. Tsai 51771* (*A, W*); *Y. Tsiang 13410* (*Su*).

This species is recognized by its hirsute stems and inflorescences and its elliptic-ovate leaves, hirsute on both surfaces, with rounded bases and long-acuminate apices.

7. **MAESA PERLARIUS** (Lour.) Merr.

Dartus perlarius LOUR., Fl. Cochinch. (1790) 124; ed. Willd. (1793) 153. This is the type species of Loureiro's genus. Merrill has discussed this type.(40, p. 298)

FIG. 4. *Maesa insignis* Chun. *a*, branchlet with fruiting inflorescences, × ½; *b*, fruit with adherent calyx and dried corolla, × 4. Drawn from the type, *Y. Tsiang 4405 (V)*.

Maesa sinensis A. DC., Ann. Sci. Nat. II. Bot. 16 (1841) 80. Based on a collection by Gaudichaud in the Delessert herbarium, given in DeCandolle's Prodromus (8, p. 82) as *Gaudichaud 279*, collected on the voyage of the Bonite in southern China. The type has not been seen.

Maesa perlarius MERR., Trans. Amer. Philos. Soc. n. ser. 24² (1935) 298. Based on *Dartus perlarius* Lour.

A shrub 1 to 3 m high with rather slender branches, the branchlets hirsute or glabrous; leaves with hirsute or pilose petioles (5 to 10 mm), the blade membranous or thin-chartaceous, broadly elliptic-ovate, obtuse at base, acute and rather abruptly acuminate at apex, about 9 cm long, 4.5 cm wide, ranging from 7 to 12 cm long, and from 3.5 to 6 cm wide, coarsely serrate above, entire below, dull green, hirsute or pilose on both sides especially when young, glabrescent except on veins beneath, the lateral nerves about 7 pairs, curved-ascending, ending in marginal teeth; inflorescences axillary, racemose or paniculate, the racemose branches usually confined to lower third of axis, 2 to 4 cm long, pilose, hirsute or puberulent, the bracts minute, lanceolate or subulate, shorter than pedicels, hirsute; flowers about 1.5 mm long on pedicels of equal length or shorter, the bracteoles minute, lanceolate or ovate, acute, usually hirsute; calyx lobes broadly ovate, obtuse or acute with thin margin, punctate or sparingly striate, hirsute or ciliate; corolla about twice length of sepals, more or less slender-lined, glabrous, the lobes equaling tube, broadly ovate, rounded, crenulate; stamens in female flowers much reduced, in male flowers inserted on upper part of tube, shorter than corolla lobes, the filaments slender, slightly longer than the small, broadly oblong or reniform, nonpunctate anthers; pistil with short, thick, cylindrical style, the stigma 4-parted, the lobes short, rounded; fruit globose, 3 mm long, longitudinally striate, the true developed ovary $\frac{1}{4}$ to $\frac{1}{3}$ exposed, the persistent sepals rarely meeting about apiculate apex.

Formosa and Kweichow to Indo-China.

FORMOSA: *U. Mori*, March 10, 1907 (*T*); *T. Soma 964* (*T*).

FUKIEN: *H. H. Chung 856* (*Am*), *877* (*Am*), *1060* (*C*), *1133* (*A, Am, C, K*), *1215* (*A, Am, C, K*); *Fukien Christ. Univ. 830* (*C*), *7026* (*A*).

HONGKONG: *C. C. C. 16692* (*NA*); *Champion, in part, ex Herb. Hookerianum* (*K*);[15] *W. Y. Chun 4860* (*A, C*), *5266* (*C*), *6160*

[15] *See also* citation of specimens from Hongkong under *Maesa tenera*.

(C), 6596 (A); Hongkong Bot. Gard., Herb. 9039 (A), 10882A (K); Kuntze 3580 (?); Pierre 5396 (Y); C. B. Robinson 1564 (Y); Y. Tsiang 727 (A), 4860 (A); Wilford 212 (K, Y); Wright 199 (G, M), 201 (G, K).

HAINAN: *C. C. C. 8031 (A, K, NA), 8458 (NA), 9216 (C, NA, W), 15675 (C, NA, W, Y), 16915 (C); Chu, Vong-may 50 (C); N. K. Chun & C. L. Tso 43402 (W, Y), 43740 (Y); Henry 8152 (G), 8669 (K); F. C. How 71387 (A), 71421 (A), 71510 (A), 72005 (A); S. K. Lau 1010 (Y), 2979 (A), 3480 (A), 6161 (A, W), 25468 (A, W); C. I. Lei 203 (A, Y), 356 (A, Y); H. Y. Liang 62355 (W, Y), 63242 (W, Y), 64237 (W, Y), 64318 (W, Y), 64319 (W, Y), 64920 (W, Y), 65009 (W, Y), 66467 (W, Y); Nanking, Herb. Univ. 5691 (C), 5958 (C); Eryl Smith 12 (Y); C. Wang 35382 (W, Y), 35410 (W, Y), 35698 (W, Y), 36184 (Y), 36459 (W, Y).*

KWANGTUNG: *C. C. C. 36 (A, F), 330 (F, NA), 358 (A, F, G, K, NA, W), 465 (A, Br, F, G, NA, W), 1059 (Br, G, F), 1251 (A, Br, G, NA, W), 1655 (A, Br, G, NA, W), 2223 (NA), 2657 (NA), 3034 (A, NA), 6924 (NA), 11536 (NA), 13312 (C, NA), 14280 (C, NA), 16593 (NA, W, Y); W. Y. Chun 3093 (Y); H. T. Ho 60142 (Y); Hongkong Herb. 10882A (K); Kuntze 3514 (Y); S. K. Lau 777 (A), 2223 (A), 2688 (A); Merrill 10961 (NA); Swinhoe,* at Amoy *(K); W. T. Tsang 20007 (W, Y), 28585 (A, W), 28725 (A, W); Y. Tsiang 29 (A, C), 179 (A), 993 (A, C), 1479 (A, C), 1660 (A, C), 1976b (A, C), 2149 (Y); T. M. Tsui 120 (A); Y. K. Wang 347 (A), 427 (A); Wang & Ling 7340 (C).*

KWANGSI: *Ching 5411 (A, W), 5414 (A, W, Y), 7027 (A, W, Y), 8347 (W); H. Y. Liang 70026 (A, W); Morse 337 (K), 389 (K); W. T. Tsang 21873 (A, W), 21987 (A, W), 22985 (A), 23997 (A), 24324 (A), 24733 (A).*

KWEICHOW: *S. W. Teng 90998 (A).*

CHINA, without precise locality: *Fortune 151 (K).*

This common Chinese species is rather readily distinguished by its short corolla tubes and hirsute branches and inflorescenes. It is generally found in literature under the name *Maesa sinensis* A. DC.[16]

[16] Unfortunately most of the specimens borrowed for study in the preparation of this revision were returned with the name *M. sinensis* A. DC., before the appearance of Doctor Merrill's treatment of Loureiro's species in the Flora Cochinchinensis,[40] where this synonymy was established.

8. MAESA PARVIFOLIA A. DC.

Maesa parvifolia A. DC., Repert. Sp. Nov. Fedde 8 (1910) 353. Based on *Bon 3825* from Kien-Khé, Tonkin. The type has not been seen.

A freely branching shrub 0.5 to 1.3 m high, the branchlets brownish, puberulent, glabrescent; leaves with puberulent petiole (3 to 6 mm), the blade membranous or thin-chartaceous, elliptic-ovate or lanceolate, acute or obtuse at base, acuminate at apex, 25 to 40 mm long, 0.8 to 1.6 cm wide, undulate to serrate, with small, callose teeth throughout the whole margin, dull green and glabrous or sparingly puberulent above, paler and distinctly puberulent beneath especially on the prominent midrib and veins, the lateral nerves about 8 pairs, ending in the teeth; inflorescences axillary, paniculate, the racemose branches not confined to lower part of axis, 3 to 7 cm long, more or less puberulent, the bracts minute, lanceolate, hirsute; flowers white, fragrant, about 1.5 mm long, on puberulent pedicels of about equal length, bracteoles minute, lanceolate, hirsute; calyx lobes broadly ovate, acute or obtuse, puberulent, ciliate on thin margin, more or less glandular-lined; corolla about 3 times length of sepals, the lobes equaling or slightly shorter than tube, broadly ovate, rounded, crenulate; stamens in female flowers reduced, shorter than corolla lobes, the filaments shorter than the broadly ovate or reniform anthers, in male flowers slightly larger, the filaments equaling the anthers; pistil shorter than corolla, style short, thick, cylindrical, stigma flattened, somewhat lobed; fruit unknown.

Southeastern China and Tonkin.

KWANGTUNG, Kwan Chow Wan: *M. Robert* (without number, received at Paris, October 21, 1908 (*W. Y*).[17]

HAINAN: *C. I. Lei 354* (*W, Y*).[18]

This species, originally described from Tonkin, is closely related to *Maesa perlarius* from which it is distinguished by the smaller leaves with small callose teeth.

9. MAESA MONTANA A. DC.

Maesa montana A. DC. in DC., Prodr. 8 (1844) 79. Based on *Wallich 2319* from Silhet, eastern Bengal, in the Munich herbarium, and *23138B*, the location and herbarium not stated. Photographs of

[17] This specimen has been determined by J. Pitard, probably by direct comparison with the type.

[18] The label on this specimen states that it is a rare species, propagated by grafting, and that the leaves are made into a delicious tea by drying, first in the sun, later with artificial heat.

two duplicates of *Wallich 2319* in the Kew herbarium have been examined. These presumably represent also *M. montana* var. *elongata* A. DC. in DC., Prodr. 8 (1844) 79.

Maesa montana var. *elongata* A. DC. in DC., Prodr. 8 (1844) 79. Based on *Wallich's* specimen *no. 2319*, presumably at Kew, which was the original of plate 2052 in Curtis's Bot. Mag. This species and its variety cannot now be differentiated by the writer. It will be necessary to examine DeCandolle's types and to study the Indian material in more detail.

Maesa elongata MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 31. Based on *Maesa montana* var. *elongata* A. DC.

Maesa castaneifolia MEZ, op. cit. 44. Based on *Henery 9464, 9464A*, and *11625* from Yunnan in the Berlin herbarium. Duplicates have been examined.

Maesa Henryi HU, Journ. Arn. Arb. 5 (1924) 232; Contr. Biol. Lab. Sci. Soc. China 1 [2] (1925) 5. Based on *Henry 11625* at the Arnold Arboretum. The type has been examined.

A shrub or small tree up to about 3 m high, the branchlets slender, generally glabrous, sometimes distinctly hirsute or pilose; leaves petiolate (1 to 2 cm), the blade membraneous to thin-chartaceous, elliptic- or oblong-lanceolate or ovate, sometimes broadly ovate to suborbicular, acute or cuneate or rarely obtuse at base, acute or abruptly or gradually acuminate at apex, 10 to 23 cm long, 3 to 9 cm wide, generally coarsely dentate with somewhat glandular teeth, glabrous and generally shining above, glabrous or sparingly hirsute and slightly paler beneath, the lateral nerves 8 to 12 pairs, ending in the teeth; inflorescences axillary, paniculate with racemose branches, 2 to 10 cm long in flower, generally shorter in fruit, glabrous or sometimes hirsute especially on bracts at base of branches; flowers about 2 mm long, on slender pedicels (1 to 3 mm), the bracteoles minute, generally lanceolate, sometimes ovate; calyx lobes oblong-ovate or ovate, obtuse or rounded, generally thin and flat, sometimes boat-shaped, entire or subciliate, generally not glandular-striate; corolla lobes equaling tube, ovate, obtuse or rounded, entire or crenulate, usually glandular-lined; stamens in male flowers minute, inserted on summit of tube, included, the filaments slender, about equaling the orbicular or reniform anthers; pistil with short, slender style and minutely lobed or cleft stigma; fruit globose or ovoid, 2.5 to 4 mm in diameter; more or less distinctly glandular-striate, true developed ovary $\frac{1}{4}$ to $\frac{1}{3}$ exposed, equaling or longer than persistent sepals.

Szechwan to Indo-China, Siam, and tropical India.

KWANGSI: *C. C. C. 4080 (NA); W. H. Soo 67600 (W); Steward & Cheo 563 (A, W).*

SZECHWAN: *W. P. Fang 55* (*A, W, Y*), *62* (*A*), *2340* (*A*), *6366* (*A, Y*), *6935* (*A, Y*), *7010* (*A*); *Handel-Mazzetti 5321* (*A, W*); *Liu, Yu-shih 1287* (*A*); *Schneider 676* (*A*); *F. T. Wang 22727* (*A, W*); *Wilson 3257* (*G, M, W*); *T. T. Yü 246* (*A*).

YUNNAN: *Forrest 8285* (*E*), *8726* (*K*), *9385* (*A, K*), *9390* (*A, K, Y*), *9491* (*A, E, K, Su*), *9523* (*A*), *9604* (*A, K*), *9814* (*A*), *16151* (*A, K*), *18431* (*K*), *26214* (*W*), *27988* (*E*); *Hancock 133* (*K*), *478* (*K*); *Henry 9464?* (*A, M, Y*), *9464A* (*A, K, M*), *9464B* (*M, Y,*) *9464C* (*W*), *10153* (*Y*), *11625* (*M*), *11625A* (*M, Y*); *E. E. Maire 2851* (*C*); *Rock 2422* (*W*), *2882* (*W*), *7194* (*W, C*), *7971* (*W, C*); *H. T. Tsai 51399* (*A, W*), *51527* (*A*), *51550* (*A, W*), *51906* (*A*), *51915* (*A, W*), *52418* (*A, W*), *53035* (*A, W*), *53089* (*A, W*), *53169* (*A*), *53181* (*A, W*), *53220* (*A, W*), *53308* (*A, W*), *54285* (*A, W*), *54584* (*A, W*), *54882* (*A, W*), *54970* (*A, W*), *55040* (*A*), *55043* (*A, W*), *55182* (*A, W*), *55194* (*A, W*), *55210* (*A*), *55486* (*A, W*), *55524* (*A, W*), *55544* (*A, W*), *55592* (*A, W*), *55659* (*A, W*), *55671* (*A, W*), *55814* (*A, W*), *56308* (*A, W*), *56385* (*A, W*), *56727* (*A, W*), *56752* (*A, W*), *56764* (*A, W*), *56793* (*A, W*), *56875* (*A, W*), *58697* (*A, W*), *58703* (*A, W*), *58759* (*A, W*), *60352* (*A, W*), *62004* (*A*), *62051* (*A, W*), *62249* (*A*), *62359* (*A*); *Y. Tsiang 12285* (*Su*), *12567* (*Su*), *12706* (*Su*), *12904* (*Su*), *13336* (*Su*); *C. W. Wang 71834* (*A, W*), *71905* (*A, W*)*?*, *72507* (*A, W*), *72816* (*A, W*), *72967* (*A, W*), *73648* (*A, W*), *73798* (*W*), *74158* (*A, W*), *76419* (*A, W*), *76945* (*A, W*)*?*, *77151* (*A, W*), *78053* (*A, W*)*?*, *79317* (*A, W*), *80316* (*A, W*).

WESTERN CHINA (without precise locality): *Wilson* (*Veitch Exped.*) *4059* (*A, K*).

A very detailed comparison of type material and available descriptions of *Maesa montana* and of the species and varieties cited here as synonyms, and a study of the numerous specimens cited above have convinced the writer that there are no reliable characters to differentiate them. This is a common and variable species. The Indian species of this difficult genus are insufficiently known.

10. MAESA RUGOSA C. B. Clarke. Text fig. 5.

Maesa rugosa C. B. CLARKE in Hook. f., Fl. Brit. Ind. 3 (1882) 508. Based on a collection by J. D. Hooker from "the upper valleys of the Teesta and Ratong," altitude 5000 to 7000 feet, India. The type has not been examined.

Maesa rugosa var. *Griffithii* C. B. CLARKE, op. cit. 509. Based on *Griffith* (*Kew Distrib. 3554*) from Bhotan, India. A duplicate at the New York Botanical Garden has been examined. Mez and Handel-Mazzetti do not recognize this variety.

FIG. 5. ***Maesa rugosa*** C. B. Clarke. *a*, branchlet with inflorescences, × ½; *b*, portion of lower surface of leaf, × 1; *c*, corolla with stamens, × 10; *d*, opened calyx, viewed from below, showing bracteoles, × 10. Drawn from *Forrest 16564* (*A*).

Maesa indica var. *retusa* HAND.-MAZZ., Symb. Sin. pt. 7 (1936) 755. Based on *Handel-Mazzetti 9031*. A duplicate has been examined.

A glabrous shrub 1 to 2 m high or higher,[19] branchlets rather slender, grayish; leaves with channeled petiole (1 to 2 cm), the blade chartaceous or coriaceous, broadly obovate, broadly obtuse to acute at base, obtuse, truncate or slightly retuse at apex with abruptly acuminate tip, 8 to 16 cm long, 5 to 10 cm wide, more or less serrate (teeth subapiculate from enlarged ends of nerves or veinlets), rugose at least when mature, dull green above, slightly paler beneath, the 8 to 12 pairs of lateral nerves and principal veinlets prominently impressed above, raised on ridges beneath, the veinlets uniting lateral nerves at right angles; inflorescences axillary, racemose-paniculate, 3 to 4 cm long, glabrous or puberulent; flowers deep creamy yellow, 2 to 2.5 mm long, on pedicels about 1 mm long, the bracteoles triangular-ovate, acute; calyx lobes generally boat-shaped, ovate, obtuse or acute, about $\frac{1}{3}$ length of petals, entire or crenulate, glandular-lined; corolla lobes about equaling tube, ovate or suborbicular, obtuse or rounded, subentire, glandular-lined; stamens minute, inserted on tube, the free part of filaments very short, the anthers ovoid; pistil slightly shorter than corolla, style cylindrical, stigma lobed or cleft; fruit ovoid, about 3 mm long, somewhat succulent, obscurely lined, the true developed ovary about $\frac{1}{3}$ exposed, slightly longer than the persistent sepals.

Yunnan and Tibet to Sikkim, India.

YUNNAN: *Forrest 16564* (*A, E, K*); *Handel-Mazzetti 9031* (*W*).

TIBET: *Forrest 19326* (*K, E*); *C. W. Wang 66878* (*A, W*).

This species is readily distinguished by the broadly obovate, blunt leaves characteristically rugose at least when mature. The Forrest specimens from Yunnan and Tibet closely resemble those of the type collection of *M. rugosa* var. *Griffithii* Clarke.

11. MAESA ACUMINATISSIMA Merr.

Maesa acuminatissima MERR., Philip. Journ. Sci. 23 (1923) 257. Based on *Canton Christian College* (*McClure*) *9454* from the south slope of Five Finger Mountains, Hainan, in the herbarium of the Bureau of Science in Manila. Duplicates have been examined.

A shrub 1 to 4 m high, glabrous throughout, the branchlets slender; leaves petiolate (1 cm), blade membranous, lanceolate, acute to rounded at base, tapering or slender-acuminate at apex,

[19] *Forest 19326* is a shrub 6 m high.

9 to 12 cm long, 2 to 3 cm wide, entire or undulate, olive-green above, slightly paler beneath without nervelike glandular lines, the lateral nerves 4 to 6 pairs, curved-ascending, anastomosing near margin; inflorescences terminal or subterminal, bipinnately paniculate, 5 to 8 cm long, pyramidal, branching from base, the lower branches up to 4 cm long; flowers about 3 mm long, on slender pedicels 4 to 5 mm long; the bracteoles minute, lanceolate, near or at summit of pedicels; calyx lobes ovate, obtuse or acute, 0.5 mm long, not glandular-striate, thin; corolla lobes about equaling tube, ovate, irregularly crenulate, not glandular-striate; stamens in female reduced, unknown in male flowers; pistil very short, the stigma scarcely lobed; fruit globose or ovoid with a more or less conical base, about 3 mm long, not distinctly lined or punctate, the exposed part of ovary short.

Hainan and Indo-China.

HAINAN: *C. C. C. 8572* (*NA*), *9454* (*A, K, M, NA, Y*), *18102* (*A, W, Y*); *S. K. Lau 5226* (*A, W*); *H. Y. Liang 62371* (*W, Y*), *62699* (*W, Y*), *63197* (*W, Y*), *65275* (*W, Y*); *Nanking, Herb. Univ. 6866* (*C*); *C. Wang 35358* (*W, Y*), *36055* (*W, Y*).

KWANGSI: *W. T. Tsang 22301* (*A, W*), *24715* (*A*).

This species is distinguished by its short corolla lobes, its slender, lanceolate, entire leaves, and its subterminal inflorescences with slender pedicels longer than the diameter of the fruits.

12. MAESA RAMENTACEA (Roxb.) A. DC.

Baebotrys ramentacea ROXB., Hort. Beng. (1814) 16, *nomen nudum;* Fl. Ind. ed. Carey 2 (1824) 231. Described from Silhet, India, without mention of a specimen. With DeCandolle's transfer is cited *Wallich, List, no. 2322,* which may be the type.

Maesa ramentacea A. DC. in DC.,[20] Prodr. 8 (1844) 77. Based on *Baeobotrys ramentacea* Roxb.

"A large shrub or small tree, usually branched from the base and sending out many straggling or climbing branches often 30–40 feet [9–12 m.] long or more, branchlets smooth, somewhat striate when dry;" [21] leaves petiolate (about 1 cm), the blade chartaceous or coriaceous, ovate to ovate- or elliptic-lanceolate, broadly obtuse, rounded or cordate at base, acute or long-acuminate at apex, 8 to 20 cm long, 2 to 7 cm wide, entire (or somewhat

[20] In Mez's monograph this species was erroneously given as *Maesa ramentacea* (Roxb.) Wall. However, this combination was first used by Alphonse DeCandolle in the Prodromus. Unfortunately this error was not discovered until after the specimens borrowed for this study had been returned with the authority given as (Roxb.) Wall.

[21] Copied from King and Gamble's description.(27, p. 96; reprint p. 306)

remotely serrate in some specimens from Indo-China), glabrous, shining above, paler beneath, the midrib prominent, impressed above, the lateral nerves about 7 pairs, remote, curved-ascending, the veinlets not evident; inflorescences axillary, sometimes appearing terminal, bipinnately racemose-paniculate, branching to above middle, 4 to 10 cm long, glabrous, the bracts subulate; flowers about 2 mm long on pedicels of equal length, the bracteoles minute, very variable from broadly ovate to lanceolate or subulate, acute; calyx lobes ovate or broadly so, obtuse or rounded, somewhat fimbriate, glabrous, not punctate; corolla more than twice length of sepals, faintly brown-lined, glabrous, the lobes equaling tube, reniform or orbicular, rounded, undulate, spreading; stamens in female flowers reduced or almost obsolete, in male flowers inserted on upper part of tube, shorter than corolla lobes, the filaments slender, slightly longer than orbicular or reniform nonpunctate anthers; pistil with very short, thick style, the stigma minutely 4-lobed; fruit globose, 2 to 3 mm long, on pedicels of equal length, longitudinally striate or nerved, the true developed ovary $\frac{1}{4}$ or less exposed above attachment of persistent sepals, these rarely meeting about apiculate apex.

Yunnan and Kwangsi, through southeastern Asia to the East Indies.

KWANGSI: *Ching 7047* (*W, Y*), *7870* (*Su, V, Y*); *W. H. Soo 68497* (*W*); *W. T. Tsang 23834* (*A*), *24501* (*A*).

YUNNAN: *Henry 10632* (*A, K, W, Y*), *13655* (*A, K, Y*); *H. T. Tsai 52637* (*A*), *60576* (*A, W*), *60621* (*A, W*), *60831* (*A*), *61872* (*A*); *Y. Tsiang 12890* (*Su*); *C. W. Wang 77512* (*A, W*), *77579* (*A, W*), *78638* (*A, W*), *78733* (*A, W*)?

This species may be distinguished by its chartaceous or coriaceous, usually entire or remotely serrate leaves and generally large, paniculate inflorescences and small fruits.

13. MAESA TENERA Mez.

Maesa indica (Roxb.) A. DC., misapplied by Bentham in Flora Hongkongensis (1861) 203. Based on collections by Champion and others. A Champion specimen in the Kew herbarium has been examined, possibly the one studied by Bentham. *See also* next synonym.

Maesa montana A. DC., misapplied by Bentham in Flora Hongkongensis (1861) 204. Based on collections by Champion and others. *See* preceding synonym.

Maesa tenera MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 28. Based on *Callery 783* (erroneously published as *83*) from Macao in the Paris herbarium. A photograph of the type has been examined.

Maesa formosana MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 29. Based on *Oldham 302* and *Warburg 9393* from Formosa, the herbarium where seen not recorded. Duplicates have been examined.

Maesa Martini LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 462. Based on *Bodinier* (*L. Martin*) *5264* in the Léveillé herbarium. The type has been examined.

A shrub usually 1 to 3 m high, occasionally over 4 m high [*ex Fukien Christ. Univ. 13665*], glabrous throughout, the branchlets rather slender; leaves petiolate (1 to 1.5 cm), the blade membranous or chartaceous, elliptic or broadly elliptic, obtuse at base, usually abruptly short-acuminate at apex, 8 to 13 cm long, 3 to 5 cm wide, sometimes smaller, coarsely serrate except near base, dull green above, slightly paler beneath, the lateral nerves about 7 pairs; inflorescences axillary, short-racemose to paniculate, 1 to 8 cm long, the bracts lanceolate to subulate, minute; flowers 1.5 to 2 mm long, on slender pedicels of about equal length, the bracteoles minute, ovate or lanceolate, acute; calyx lobes broadly ovate, acute or obtuse, glabrous, the margin thin, entire or crenulate or subciliate; corolla about twice length of sepals, the lobes equaling tube, broadly ovate, rounded, crenulate; stamens in female flowers much reduced, in male flowers inserted on upper part of tube, shorter than corolla lobes, the filaments slender, slightly longer than the small, oblong, nonpunctate anthers; pistil with short, thick, cylindrical style, stigma 4-parted, the lobes short, rounded; fruit globose or ovoid, 2 to 3 mm long, obscurely lined, the true developed ovary $\frac{1}{4}$ to $\frac{1}{8}$ exposed above attachment of persistent sepals, these less commonly meeting about apiculate apex.

Japan and the Liu Kiu Islands to Formosa, Fukien, and the coastal provinces (mostly) to Indo-China.

JAPAN, Oshima Island: *Wilson 6138* (*A*); *Wright 185* (*G, K*).

LIU KIU ISLANDS: *R. Kanehira 3243* (*Y*), *3363* (*Y*), *3431* (*Y*); *S. Tanaka 135* (*T*); *Wilson 8038* (*A, W*), *8087* (*A*), *8122* (*A, K, W*).

FORMOSA: *Faurie 253* (*A*), *259* (*A*), *328* (*A*); *Formosa, Herb. Gov't. W235* (*A*), *21231* (*A*), *21868* (*A, C*), *21947* (*C*)*?*; *Gressitt 7* (*Y*), *71* (*A, Y*), *203* (*Y*); *Henry 64* (*W*), *203* (*A, W*), *461* (*A*); *T. Kawakami 41* (*T*); *T. Kawakami & U. Mori 1963* (*T*); *S. Nagasawa 316* (*T*); *Oldham 302* (*G, K*), *303* (*K*), *305* (*F, K, Y*); *W. R. Price 10* (*K*), *117* (*K*), *772* (*K*), *1111* (*K*); *T. Soma 1039* (*A*), *1147* (*T*); *Taihoku Imp. Univ., Herb. 10983* (*A, W*), *11165* (*W*); *T. Tanaka 5393* (*A*); *Warburg 9393* (*V*);[22]

[22] This number in the Kew herbarium is *M. japonica.*

Wilson 8038 (*W*), *8122* (*K, W*), *9791* (*A, K, W*), *9918* (*A, K, W*), *11047* (*A, K, W*).

FUKIEN: *H. H. Chung 906* (*Am*), *2644* (*A, Am, C*), *3140* (*Am, C*), *3141* (*Am, C*), *3185* (*A, Am, C*), *7387* (*A*), *7725* (*A*), *8039* (*A*), *8419* (*A, Y*); *Fukien Christ. Univ. 811* (*C*), *15022* (*C*), *15382* (*C*).

HONGKONG: *Champion, in part, ex Herb. Hookerianum* (*K*);[23] *W. Y. Chun 7517* (*?*); *C. L. Tso 20153* (*Y*); *Wilford ? 131 ex Herb. Benthamianum* (*K*).

MACAO: *Callery 783* (*W*).

HAINAN: *Formosa, Herb. Gov't. 21947* (*?*); *Nanking, Herb. Univ. 6639* (*W*) *?*

KWANGTUNG: *C. C. C. 11574* (*NA, W*), *18593* (*Y*); *W. Y. Chun 5790* (*A*), *6305* (*A, C*); *S. Y. Lau 20268* (*Y*); *Mell 644* (*A*); *G. R. Tate 1863* (*K*); *W. T. Tsang 28563* (*A, W*); *Y. Tsiang 1922* (*A, Y*), *2631* (*Y*); *C. L. Tso 20550* (*Y*); *Y. K. Wang 1811* (*A, C*).

KWANGSI: *Ching 6548A* (*Y*), *6904* (*W*); *H. Y. Liang 66857* (*W*), *69556* (*A, W*); *W. T. Tsang 21957* (*A, W*); *C. Wang 39018* (*A, W*).

KWEICHOW: *Bodinier* (*L. Martin*) *2564* (*A, E*).

YUNNAN: C. *W. Wang 77000* (*A, W*) *?*

The only observable differences in the two species described by Mez as *M. formosana* and *M. tenera*, as found in a study of the assembly of specimens including the type numbers, are in the length and type of the inflorescences. Most of the specimens from Formosa bear short racemes, those from Kwangtung longer, racemose panicles. However, in the absence of any other differences and in view of the fact that there are specimens with long inflorescences in Formosa and some with short inflorescences in Kwangtung, it seems best to consider these as one species. Whether or not they represent varietal or sexual differences cannot at the present time be determined. Kuntze (29, p. 41) pointed out the impossibility of using either size of inflorescence, leaf serration, or size and fleshiness of fruit to separate species of *Maesa*. Bentham (1, p. 205) separated "*Maesa indica* (Roxb.) A. DC." (that is, *M. tenera* Mez) and *M. montana* A. DC. in the key by the small dry fruits of the former contrasted with the larger, succulent berries of the latter. This succulent nature of the fruits appears, so far as one can determine from dried specimens, to be either a stage of development or a diseased

[23] *See also* citation of specimens from Hongkong under *Maesa perlarius*.

condition, since it occurs in various species. Bentham's interpretation of DeCandolle's species is almost certainly erroneous, for the specimens which he describes are with little doubt to be considered as *M. tenera* Mez, the glabrous species commonly occurring in the coastal regions.

14. MAESA HUPEHENSIS Rehd.

? *Maesa japonica* var. *elongata* MEZ (in part), in Engl. Pflanzenreich 9 (IV. 236) (1902) 51. Based on *Henry 665, 7124, 7757, 7920,* and *Lamont 415,* from Hupeh and Szechwan; location of the specimens not given. Duplicates of *Henry 7124, 7757,* and *7920* have been examined. *Henry 7757* is referred to *Maesa japonica* (Thunb.) A. DC. in this revision.

Maesa hupehensis REHD. in Sarg., Pl. Wils. 2 (1916) 583. Based on *Wilson 764* from Changlo Hsien, western Hupeh, at the Arnold Arboretum. The type has been examined.

Maesa Wilsonii REHD. in Sarg., Pl. Wils. 2 (1916) 584. Based on *Wilson, Veitch Exped. 4905* at the Arnold Arboretum. The type has been examined.

A shrub 1 to 3 m high, glabrous throughout, the branchlets slender, grayish or brownish; leaves petiolate (1 cm), the blade membranous or chartaceous, lanceolate or oblong-lanceolate, rounded or sometimes acute at base, long-acuminate or rarely acute at apex, 10 to 21 cm long, 2 to 4 cm wide, entire, sinuate-dentate or rarely serrate, dark green above, paler beneath, clearly striate with glandular lines, the lateral nerves about 10 pairs; inflorescences axillary, 4 to 10 cm long, generally racemose, sometimes paniculate, the branches racemose; flowers 3 to 4 mm long on pedicels of equal length, the bracteoles minute, subulate or lanceolate; calyx lobes ovate, acute or rounded, 1.5 mm long, abundantly glandular-striate, the margin thin; corolla 3 mm long, glandular-striate, the lobes about equaling tube, broadly ovate, rounded; stamens short, included, the filaments about equaling the ovate anthers; pistil equaling or slightly exceeding sepals, style cylindric, stigma slightly 4-lobed; fruit globose or ovoid, 3 to 4 mm long, yellowish, more or less dark glandular-striate.

Central China.

HUPEH: *Henry 7920* (*K*); *Nanking, Herb. Univ. 3862* (*A*); *Wilson 764* (*K, W, Y*), *772* (*V*).[24]

SZECHWAN: *S. F. Chang 791* (*Su*); *Faber 665* (*K, V*); *W. P. Fang 2056* (*A*), *2114* (*A*), *2519* (*A*), *2530* (*A*), *2588* (*A*), *3901*

[24] The label gives the locality as "W. China; Nanto," which is probably not far from the location where the type was collected, which is definitely given as in Hupeh.

(A); Henry 7124 (K, W, Y); Y. S. Liu 1041 (A), 1637 (A), 1768 (A), 1826 (A); Wilson (Veitch Exped.) 4057 (A, K, Y), 4905 (A, K, Y), 4905a (K); Wilson (Arn. Arb. Exped.) 3258 (A, G, K, W).

This species is recognized by its short corolla tubes, its glabrous branches, inflorescences and flowers, its lanceolate or oblong-lanceolate leaves with round bases, and its sparingly branched inflorescences with flowers 2 to 3 mm long.

15. MAESA MEMBRANACEA A. DC.

Maesa membranacea A. DC., Ann. Sci. Nat. II Bot. 16 (1841) 80; Prodr. 8 (1844) 78; Mez in Engl., Pflanzenreich 9 (IV. 236) (1902) 46. Based on a collection by Gaudichaud (without number) from Cochin China and from Manila, Philippines, in the Gaudichaud herbarium, now probably at Paris, and in the Delessert herbarium. These specimens have not been examined. Mez excludes the Philippine specimens from this species and cites the Berlin, DeCandolle, Delessert, and Paris herbaria for Gaudichaud's Cochin China specimen. The following interpretation of this species is based largely on Pitard's description and on apparent duplicates of some of his cited specimens from Annam and Cochin China.(48, p. 782)

A glabrous forest shrub about 2 m high [up to 5 m *ex* Pitard], at least sometimes scandent, the branches smooth, greenish brown; leaves petiolate (2 to 4 mm), the blade membraneous to thin-chartaceous, broadly elliptic-ovate, broadly obtuse at base, obtuse and abruptly acuminate at apex, 9 to 19 cm long, 6 to 11 cm wide, undulate to denticulate with subglandular teeth, dull green above, slightly paler beneath, finely and closely striate with nervelike glandular lines, the midrib prominent beneath, the lateral nerves 7 to 10 pairs with branches ending in teeth, rather prominent, the veinlets very obscure; inflorescences axillary and terminal, paniculate, 2 to 6 cm long, the branches racemose; flowers barely 2 mm long on pedicels of equal length or shorter, the bracteoles ovate, acute, apparently narrower in fruit, minute, more or less ciliate; calyx lobes broadly ovate, obtuse or rounded, entire or irregularly crenulate, not ciliate or very minutely so, more or less glandular-striate; corolla lobes about equaling tube, broadly ovate, rounded, crenulate, glandular-striate; stamens in male? flowers included, minute, attached to lower part of corolla tube, the filaments shorter than ovoid anthers; pistil in female flowers short, the style rather thick, the stigma obscurely lobed; fruit globose, scarcely 3 mm long, more or less finely glandular-striate, the sepals not meeting about exposed free part of ovary (about $\frac{1}{3}$ length of fruit).

Indo-China and Hainan.

HAINAN: *N. K. Chun & C. L. Tso 43942* (*W, Y*); *F. C. How 72408* (*A, W*); *H. Y. Liang 64410* (*W, Y*), *64897* (*W, Y*); *C. Wang 34513* (*W, Y*).

This glabrous species with short corolla tubes is characterized by its broadly elliptic and obtuse dull-green leaves, the veinlets practically invisible, the lower surfaces glandular-striate, its terminal and axillary rather short inflorescences, and its eciliate sepals.

16. MAESA BALANSAE Mez.

Maesa Balansae MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 41. Based on *Balansa 1063* and *1064* from Guang-yen, Tonkin; location of the type not mentioned. Duplicates have not been seen.

A shrub 1 to 3 mm high, glabrous throughout, the branches scandent, the branchlets rather slender, dark purplish or blackish, shining, the leaves petiolate (2 to 2.5 cm), the blade chartaceous, broadly elliptic-ovate, truncate or broadly obtuse at base, obtuse and shortly acuminate at apex, 12 to 16 cm long, 7 to 12 cm wide, entire or denticulate with very short teeth, generally dull green above, scarcely paler beneath, the midrib prominently raised beneath, the lateral nerves 6 to 9 pairs, prominent, the veinlets evident, more or less reticulate, not glandular-striate beneath or obscurely so; inflorescences axillary and terminal, paniculate, 7 to 18 cm long, the branches racemose; flowers 1 to 2 mm long, on pedicels of equal length, the bracteoles lanceolate, acute, about 0.5 mm long; calyx lobes broadly ovate, obtuse, entire or denticulate, rarely very minutely ciliate, more or less glandular-striate; corolla lobes about equaling tube, broadly ovate, rounded, crenulate, sparingly glandular-striate; stamens included, attached to top of corolla tube, the filaments slightly longer than the ovoid anthers; pistil with capitate or 5-lobed stigma, style thickened at base; fruit ovoid, about 3 mm long, finely glandular-striate.

Kwangsi, Hainan, and Indo-China.

HAINAN: *N. K. Chun & C. L. Tso 44592* (*W, Y*); *S. K. Lau 236* (*W, Y*), *1052* (*A, Y*), *2812* (*A*), *3405* (*A*), *4874* (*A, W*), *5807* (*A, W*), *27059* (*A, W*); *H. Y. Liang 63246* (*W, Y*), *63283* (*Y*), *63801* (*W, Y*), *65356* (*W, Y*), *65371* (*W Y*). *66021* (*W, Y*), *66030* (*W, Y*), *66117* (*W, Y*), *66309* (*W, Y*), *66328* (*W, Y*); *C. Wang 34779* (*W, Y*), *35137* (*W, Y*).

KWANGSI: *S. P. Ko 55134* (*A, W*); *Morse 329* (*K*), *402* (*K*), *409* (*K, Y*), *455* (*K*); *W. T. Tsang 21876* (*A, W*).

This glabrous species with short corolla tubes is recognized by its broadly elliptic-ovate, chartaceous, entire or denticulate leaves with broadly obtuse bases, its distinctly visible veinlets, its indistinct or wanting glandular-striate lines on the lower leaf surfaces, its large inflorescences, and its nonciliate sepals.

17. MAESA INDICA (Roxb.) A. DC. Text fig. 6.

Baeobotrys indica ROXB., Hort. Beng. (1814) 16, *nomen nudum;* Fl. Ind. ed. Carey 2 (1824) 230. Described from Chittagong, eastern Bengal, India, without mention of specimens. Wallich designated his no. 2318B(62) as *Baeobotrys indica,* but DeCandolle(8, p. 80) rejected this determination, citing this specimen under his *Maesa montana.* A photograph of the duplicate of this number in the Kew herbarium has been examined.

Maesa indica A. DC., Trans. Linn. Soc. 17 (1834) 134. Based on *Baeobotrys indica* Roxb. This shrub was erroneously given in Mez's monograph as *Maesa indica* (Roxb.) Wall.

The status of this species is too uncertain to justify the preparation of a formal description at this time. It seems to be very variable, as are several allied species. A specimen collected by *A. Henry* at Mengtze, Yunnan, *no. 10416A,* at the Kew herbarium, has been referred to this species by S. T. Dunn.(13, p. 460) Although the original specimen at Kew and additional specimens of this number at the Arnold Arboretum, the Missouri Botanical Garden, and the United States National Herbarium have been examined, it is impossible to determine with certainty whether it represents Roxburgh's species. They differ from the specimens here considered to represent *Maesa montana* A. DC. in their distinctly thicker and more wrinkled stems, and broader, ovate leaves (though they are not broader than the most extreme specimens of *M. montana*). Also the marginal teeth are finer, subapiculate rather than broadly triangular as in most of the specimens referred to *M. montana.* The inflorescences are distinctly paniculate, the branches racemose. There are available for study two specimens of *Henry 10416,* both at the New York Botanical Garden; and one of *Hancock 460,* in the Kew herbarium, all from Mengtze, Yunnan, which may also be provisionally referred to *M. indica.* The inflorescences however, are much shorter than those of *Henry 10416A,* the leaves more chartaceous and broadly oblong-ovate, with nearly a third more lateral nerves, that is, about 12 pairs. The stems are characteristically thicker than those of *M. montana.* The under surfaces of these leaves correspond with the

FIG. 6. *Maesa indica* (Roxb.) Wall. *a*, branchlet with inflorescences, × ½; *b*, whole flower, × 7½; *c*, corolla with stamens, × 7½; *d*, flower with corolla removed, × 7½. Drawn from *Henry 10416A (W)*.

descriptions in DeCandolle's Prodromus and Mez's monograph in having fine glandular striations in the parenchyma.

Provisional determinations:

YUNNAN: *Hancock 460* (*K*); *Handel-Mazzetti 5821* (*W*); *Henry 10416* (*A, K, Y*), *10416A* (*A, K, M, Y*); *H. T. Tsai 51610* (*A*)*?*, *52500* (*NA, W*), *53314* (*A, Fa*)*?*, *55433* (*A, W*), *60444* (*W*), *60766* (*A, W*); *Y. Tsiang 12491* (*Su*), *13352* (*Su*), *13370* (*Su*), *13539* (*Su*); *C. W. Wang 73830* (*A, W*).

18. MAESA CONSANGUINEA Merrill.

Maesa consanguinea MERR., Philip. Journ. Sci. 23 (1923) 258. Based on *Canton Christian College* (*McClure*) *9468* from the south slope of the Five Finger Mountains, Hainan, in the herbarium of the Bureau of Science in Manila. Duplicates have been examined.

A scandent shrub 1 to 1.5 m high, glabrous throughout, the branchlets smooth; leaves petiolate (1 to 1.5 cm), the blade membranous, oblong to oblong-ovate, rounded or obtuse at base, subcaudate at apex, 7 to 12 cm long, 3 to 6 cm wide, entire or slightly undulate or remotely denticulate, olive-green and somewhat shining above, paler beneath with nervelike glandular lines, the lateral nerves 5 or 6 pairs; inflorescences axillary, paniculate with racemose branches or sometimes racemose, 4 to 10 cm long,[25] glabrous; flowers unknown; fruit 3 mm in diameter, globose, on pedicels of equal length, dark brownish, longitudinally glandular-striate, the true developed ovary about $\frac{1}{3}$ exposed above the ovate, obtuse, persistent sepals, these thin-margined and glandular-lined, not meeting the more or less persistent style.

Hainan only.

HAINAN: *C. C. C. 9468* (*C, NA, Y*), *9541* (*A, NA*), *17574* (*Y*); *H. Y. Liang 63281* (*W, Y*); *C. Wang 35756* (*Y*).

This species is recognized by its short corolla tubes, its glabrous stems, inflorescences, and flowers, its entire or slightly undulate or remotely denticulate leaves, and its paniculate inflorescences with relatively short pedicels.

19. MAESA LAXIFLORA Pitard.

Maesa laxiflora PITARD in Lecomte, Fl. Gén. Indo-Chine 3 (1930) 780. Based on *Evrard* [*263?*]; and *Poilane* [*7278, 1485, 9997?*],[26] all from Annam; duplicates at the Arnold Arboretum.

[25] The original description gave the length of the inflorescences as 1 to 2.5 cm, but additional material has shown this to be inaccurate.

[26] No collectors numbers are cited with the original description, but duplicates or fragments from Pitard's specimens at Paris with the same local data bear these numbers and are probably the specimens referred to by him.

A glabrous forest shrub up to 5 m high with trunk diameter up to 5 cm, probably sometimes scandent, the branches slender, smooth, brownish; leaves petiolate (2 to 3.5 cm), the blade thin-chartaceous to membranous, ovate, broadest below middle, truncate at base, acute and acuminate at apex, 9 to 17 cm long, 4 to 10 cm wide,[27] shallowly dentate with subglandular teeth and reflexed edge, shining green above, hardly paler and finely and closely nervelike glandular-lined beneath, the midrib prominent beneath, the lateral nerves about 10 pairs with branches ending in the teeth, rather prominent, the veinlets very fine, almost invisible; inflorescences axillary and terminal, paniculate, 5 to 12 cm long, the branches racemose, much scattered; flowers white, scarcely 2 mm long, on pedicels of equal length or shorter, the bracteoles ovate, more or less glandular, not ciliate; calyx lobes broadly ovate, obtuse or rounded, entire or crenulate, not ciliate, glandular-striate; corolla lobes about equaling tube, broadly ovate, rounded, mostly entire, glandular-striate; stamens in female (?) flowers much reduced, included, the filaments longer than the very small anthers, in male unknown; pistil in female flowers slightly longer than sepals, the style short; fruit globose or somewhat ovoid, about 4 mm long, more or less glandular-striate or ribbed, the sepals nearly meeting about the conical style base, exposed part barely $\frac{1}{4}$ length of fruit.

Indo-China and Hainan.

HAINAN: *Gressitt 1099* (*A*); *F. C. How 72010* (*A, W*); *C. I. Lei 256* (*Y*), *393* (*Y*); *H. Y. Liang 64708* (*W, Y*).

This glabrous species with short corolla tubes may be recognized by its ovate, shining leaves with truncate bases, acute and acuminate apices, obscure or invisible veinlets and abundant fine, nervelike, glandular lines beneath, its usually large, open, paniculate inflorescences, and its eciliate sepals. All the specimens cited by Pitard have smaller leaves than most of those from Hainan, but otherwise conform. This species is apparently most closely allied to *Maesa membranacea* A. DC. but may be separated especially on leaf characters.

UNCERTAIN SPECIES

1. MAESA ARGENTEA var. KWANGSIENSIS Hand.-Mazz.

Maesa argentea var. *kwangsiensis* HAND.-MAZZ., Sinensia 5 (1934) 4. Based on *Ching 6542*, a fruiting specimen from Kwangsi, probably in the Vienna herbarium.

[27] Pitard gives leaf dimensions as 9 to 11 cm long, 2.5 to 5 cm wide, but in most of the specimens from Hainan the leaves are longer and wider.

The original description is: "Differt a typo ramulis foliisque glaberrimis, lineolis glandulosis dentitutis, inflorescentiis fructiferis 3–4½ cm. longis, glabris, sepalis acutioribus, capsulis in stylos crassiores magis productis." Without flowers this variety cannot certainly be attributed to this species with long corolla tubes. If it does so belong, it is properly distinct as a variety. If its corolla tube is short it is probably a variety of *M. tenera* Mez or of *M. montana* A. DC., or possibly of *M. indica* A. DC. Its smaller leaves differentiate it from typical *M. montana* while its fruits are larger than those of typical *M. tenera.* As these species are variable it seems best to consider this a doubtful variety.

2. MAESA AUGUSTINI (Nakai) Tuyama.

Maesa Augustini (Nakai) TUYAMA, Bot. Mag. Tokyo 52 (1938) 467. Based on *Chrysophyllum augustini* Nakai.

Chrysophyllum Augustini NAKAI, Bot. Mag. Tokyo 47 (1933) 262. Based on a collection by S. Aoki from Minami-iwôtô Island, St. Augustine Island in the Sulphur Islands at the southern end of the Bonin Islands group; deposited in the Herbarium of the Imperial University of Tokyo.

Professor Tuyama has kindly sent the writer a leaf from the type specimen of *Chrysophyllum Augustini* Nakai and a portion of his collection of March 31, 1936, from the type locality. The original description says concerning the pistil: "ovarium depresso-conicum 3–4 loculare; stylus solitarius 0.2–0.3 mm. longus; stigmata 3 vel 4; ovula in quoque loculo ovarii solitaria pendula." Although this description seems much at variance with the characters of *Maesa,* Tuyama's specimen bears flowers which are unquestionably those of *Maesa.* The leaf from the type specimen has rather large teeth, but those of the other specimen are smaller. The writer is unable to differentiate this specimen from *M. tenera* Mez, but further material should be studied before it is finally referred.

3. MAESA JAPONICA var. LATIFOLIA Miquel.

Maesa japonica var. *latifolia* MIQUEL, Cat. Mus. Bot. Lugd. Bat. Pars prim. (1870) 65, *nomen nudum;* MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 51. Mez cites "Siebold (Herb. Leiden)."

This specimen has not been examined.

4. MAESA LANCEOLATA α PANICULATA var. PYRIFOLIA (Miquel) Kuntze.

Maesa lanceolata α paniculata var. *pyrifolia* (Miquel) KUNTZE, Rev. Gen. Pl. 2 (1891) 401.

Miquel's name, attributed to "Canton and Turong" by Kuntze, cannot be traced.

5. MAESA MOLLIS Decaisne.

Maesa mollis DECAISNE, Rev. Hort. Paris III 3 (1849) 92. Based on cultivated plants of unknown origin, suspected to be from Asia.

This species cannot be recognized. The name is untenable because of *Maesa mollis* A. DC., Trans. Linn. Soc. 17 (1834) 134.

6. MAESA RANDAIENSIS Hayata.

Maesa randaiensis HAYATA, Journ. Coll. Sci. Univ. Tokyo 30[1] (1911) 177. Based on a specimen collected at Randaizan, Formosa, by *T. Kawakami* and *U. Mori*, March, 1908, *no. 8547*. This specimen has not been examined.

This species is said to be near *Maesa japonica*, and, according to the original description, differs from the description here given for that species only in the narrower leaves, these being 1.5 cm wide as compared with a minimum of 2 cm in the specimens observed. However, *Maesa japonica* appears very variable, and *M. randaiensis* may very likely prove to be a synonym of this species. It has been placed by G. Masamune as a synonym of *M. japonica* var. *elongata* Mez.(36, p. 353)

7. MAESA TAIHEIZANENSIS Sasaki.

Maesa taiheizanensis SASAKI, Trans. Nat. Hist. Soc. Formosa 21 (1931) 252. Based on a collection by S. Sasaki, April 25, 1930, from Mount Taihei, Formosa, altitude 1,500 m. The type, probably in the herbarium of the Taihoku Imperial University, Formosa, has not been examined.

This species is said to differ from *M. formosana* Mez (= *M. tenera* Mez) in its longer acuminate leaves and longer pedunculate inflorescences. In R. Kanehira, Formosan Trees,(26) it is said to be distinguished by its "entire, lanceolate leaves," but the original description describes the leaves as "loose serrate."

EXCLUDED SPECIES

1. MAESA AUREA Léveille.

Maesa aurea LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 375.

This name, based on *Cavalerie 2719* from Kweichow, has been referred by A. Rehder to *Symplocos Bodinieri* Brand in the Symplocaceæ(50, 15 p. 299)

2. MAESA BLINII Léveillé.

Maesa Blinii LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 376.

This name, based on *Cavalerie 3103* from Kweichow, has been referred by A. Rehder to *Rhamnus Blinii* (Léveillé) Rehd. in the Rhamnaceæ.(50, 15 p. 15)

3. MAESA BODINIERI Léveillé and Blin.

Maesa Blinii LÉVEILLÉ and BLIN. in Léveillé, Fl. Kouy-Tcheou (1914–1915) 286.

This name, based on *Eurya Cavaleriei* Léveillé [Repert. Sp. Nov. Fedde 9 (1911) 450.], the type being *Cavalerie 406*, collected at Pin Fa, Kweichow, August 8, 1902, has been referred by A. Rehder to *Symplocos laurina* (Retz.) Wall. in the Symplocaceæ. (50, 15 p. 299)

4. MAESA DEPAUPERATA Diels.

Maesa depauperata DIELS, Bot. Jahrb. Engl. 29 (1900) 519.

This name, based on *Bock & von Rosthorn no. 231*, collected at "Liang-t'ien-wan, Nan-ch'uan," Szechwan, was excluded by Mez from this family on the basis of its determination by E. Gilg as *Vaccinium laetum* Diels.(43, p. 396) Fragments of the types of these two species, kindly sent the author from the Berlin herbarium, have been compared and Gilg's reduction confirmed.

5. MAESA MYRSINOIDES Léveillé.

Maesa myrsinoides LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 375.

This name has been transferred to *Ilex* by Rehder as *Ilex metabaptista* var. *myrsinoides* (Léveillé) Rehd.(50, 14 p. 240)

6. MAESA SCANDENS Léveillé.

Maesa scandens LÉVEILLÉ, Repert, Sp. Nov. Fedde 10 (1912) 375.

This name, based on *J. Esquirol 369* and *399*, has been placed as a synonym of *Trachelospermum axillare* Hook. f. (Apocynaceæ) by Y. Tsiang.(58, p. 146)

7. MAESA SINGULIFLORA Léveillé.

Maesa singuliflora LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 440.

This name, based on *Cavalerie 3626* from Kweichow, has been referred by A. Rehder to *Quercus phillyreoides* A. Gray.(50, 10 p. 121)

IMPORTANT UNDETERMINED SPECIMENS

Forrest 12256 (K) from Yunnan. This diseased specimen has been determined as *M. chisa* D. Don, a species as yet unknown in China, the status of which has not been determined.

Henry 11453 (*K, Y*) from Mengtze, Yunnan. This specimen is abnormal, as are many specimens of this genus, due to a diseased condition. The leaves are small and remotely serrulate except near the base and suggest *Maesa japonica.*

Rock 7199 (*W*) from between Tengyueh and Lungling, Yunnan. This specimen resembles those of *Maesa montana* except

that the stem is very much thicker and angled. It might be *Maesa indica,* but the leaves are rather long and oblong-lanceolate and very distinct from those of the specimens provisionally referred to that species.

2. Genus AEGICERAS Gaertn.

Aegiceras GAERTN., Fruct. & Sem. 1 (1788) 216, *pl. 46.* Based on *A. majus* Gaertn.

Umbraculum RUMPF. in Kuntze, Rev. Gen. Pl. 2 (1891) 405. Based on *U. corniculatum* (Linn.) Kuntze.

Flowers perfect, 5-merous, about 7 mm long; sepals free, asymmetric, twisted to left, dextrorsely imbricate, persistent; petals united into a tube, overlapping to right in bud, the lobes recurved or reflexed during æstivation; stamens with lower part of filaments united into a tube as long as corolla tube, the lower part united to corolla tube, the upper free part exserted, the anthers ovate, transversely septate, dehiscing by longitudinal slits; pistil with the superior ovary narrowed into an elongate style, the stigma punctiform, the ovules several-ranked, immersed in a globose placenta; fruit an elongate, curved, 1-seeded capsule, dry externally, somewhat fleshy within, dehiscing by a longitudinal fissure or separating into two fragments along back and front, the seed occupying the whole cavity.

Seacoast shrubs or small trees, commonly occurring with species of *Rhizophora;* leaves simple, entire, inflorescences in terminal or axillary umbels or panicles.

Species two in Malaysia, tropical Australia, and southern Asia, one reaching to the coast of southern China.

AEGICERAS CORNICULATA (Linn.) Blanco.

Rhizophora corniculata LINN., Diss. Herb. Amboin. 1754 [republished in Amoen. Acad. 4 (1759) 123].

Aegiceras majus GAERTN., Fruct. & Sem. 1 (1788) 126, *pl. 46, fig. 1.* No specimen is mentioned.

Aegiceras corniculata BLANCO, Fl. Filip. (1837) 79. Based on *Rhizophora corniculata* Linn.

Umbraculum corniculatum KUNTZE, Rev. Gen. Pl. 2 (1891) 405. Based on *Rhizophora corniculata* Linn.

A glabrous shrub or small tree with grayish-black, smooth branches, the branchlets reddish; leaves short-petioled, the blade coriaceous, elliptic to obovate, cuneate at base, rounded or emarginate at apex, 5 to 8 cm long, 3 to 4 cm wide, entire, revolute on margin, glabrous, inconspicuously punctate, the lower surface with minute pores when dry; inflorescences axillary or ter-

minal, umbellate, nearly sessile, 15- to 20-flowered, the bracts oblong-lanceolate, deciduous, the pedicels slender, 1 cm long; flowers 10 mm wide when open, conical in bud; sepals rigid, coriaceous, asymmetric, expanded at base on overlapping side, broadest at apex, 6 mm long, 4 mm wide, prominently veined and black-punctate on lower part; petals asymmetric, united below, the tube villous-hairy within, the lobes ovate, acuminate, equaling tube, reflexed; stamens longer than corolla tube, the filaments united half their length, villous below, glabrous on free upper part, the anthers about 3 mm long; pistil 8 mm long, the ovary ovoid, the style black-punctate below; fruit curved, up to 8 cm long, 6 mm in diameter, pale brown, glabrous, the base clasped by the twisted persistent sepals, seed elongate.

Malaysia, tropical Australia, and the southern coast of Asia from Ceylon to southern China.

HONGKONG and adjacent islands (British): *C. C. C. 16654* (*A, NA, W*); *F. N. Chun 6071* (*A*); *W. Y. Chun 4848* (*A*), *6071* (*A*); *Hongkong Bot. Gard., Herb. 7355 in part* (*A*); *Y. Tsiang 171* (*A*).

HAINAN: *N. K. Chun & C. L. Tso 43318* (*A, Y*); *F. C. How 70887* (*A, Y*); *S. K. Lau 509* (*A, W, Y*); *C. Wang 36020* (*A, Y*).

KWANGTUNG: *T. M. Tsui 258* (*A, Y*).

Without special locality: *Ford,* March 25, 1898 (*W, Y*).

3. Genus ARDISIA Swartz

Tinus BURM., Thes. Zeyl. (1737) 222, *pl. 103*. This pre-Linnæan genus was taken up by Kuntze and all species of *Ardisia* transferred to it.

Bladhia HORNSTED, Nov. Gen. Pl. (1781) 6. Based on *Bladhia japonica* Hornsted.

Bladhia THUNB. (as erroneously used for *Bladhia* Hornsted).

Ardisia SWARTZ, Prodr. Veg. Ind. Occ. 3 (1788) 48; Fl. Ind. Occ. 1 (1797) 467, *pl. 10*. Based on *Ardisia tinifolia* Swartz from Jamaica, West Indies.

Flowers perfect, usually 5- rarely 4-merous, 2 to 7 mm long; sepals free or shortly united at base, valvate or imbricate; petals shortly united at base, the lobes dextrorsely overlapping, often appearing convolute in bud, recurved or spreading, rarely erect; stamens attached at base of corolla tube, the filaments very short, broad, the anthers large or dehiscing by longitudinal slits or rarely by pores; pistil with pyramidal, ovoid, or subglobose ovary, the style elongate, slender to filiform, sometimes exceeding petals, the stigma minute, punctiform; ovules 3 to 12 or more

in one or more series; fruit a globose 1-seeded berry with crustaceous or bony endocarp, the apex generally mucronulate from persistent style base, the seed covered by membranous remnant of placenta, globose with a hollow base, albumin horny, the embryo cylindrical, transverse.

Small trees, shrubs, or suffrutescent undershrubs (herbaceous in *A. primulifolia*), the leaves generally alternate (sometimes opposite or subverticillate in § *Bladhia*), entire, crenate or serrate, with distinctive resinous marginal glands in § *Crispardisia*, the inflorescences paniculate, corymbose or subumbellate, terminal or axillary, the pedicels generally subumbellate, the flowers white or pinkish, often spotted.

A large genus with about 250 species occurring in tropical America, the Pacific Islands, the East Indies, and Asia, rare in Australia, wanting in Africa, 53 in eastern Asia.

Ardisia Swartz appears on the list of *nomena conservanda* in the International Rules of Botanical Nomenclature. Professor Nakai(44) rejects *Ardisia* because of the priority of *Bladhia* and because the American species have biracemose inflorescences and imbricate sepals. However, examination of the available specimens of the type species, *Ardisia tinifolia* Swartz from Jamaica, shows that the sepals are in no way different in arrangement from those of the Asiatic species having imbricate sepals, and there are no other characters justifying the generic separation of the New and Old World species. Nakai's practise is generally followed by the Japanese botanists.

Key to the eastern Asiatic sections of Ardisia.

a^1. Erect woody undershrubs, shrubs, or small trees, generally branching, at least with special lateral flowering branches usually bearing a few leaves or leaflike bracts, or if unbranched, leaves with distinctive albuminous marginal glands; leaves generally entire, sometimes crenate or undulate (serrate in *A. cornudentata*) with marginal glands in teeth or sinuses.

b^1. Leaves without albuminous marginal glands.

c^1. Sepals strongly dextrorsely imbricate during anthesis, densely punctate, broadly ovate, obtuse or rounded, or, if only moderately imbricate, less densely punctate and somewhat acute, inflorescences pyramidal-paniculate on ends of rather stiff, smooth, special flowering branches ..... § *Tinus*.

c^2. Sepals not strongly dextrorsely imbricate during anthesis, with or without punctate glands, generally not broadly ovate, acute or obtuse.

d^1. Inflorescences truly terminal, pyramidal-paniculate. § *Acrardisia*.

d^2. Inflorescences lateral or in axils of normal or greatly reduced leaves or bracts, sometimes appearing subterminal, but if so, not pyramidal-paniculate, sometimes on ends of special flowering branches ..... § *Akosmos.*

b^2. Leaves with albuminous marginal glands..... § *Crispardisia.*

$a.^2$ Plants suffrutescent, sometimes repent undershrubs, rarely herbaceous (*A. primulifolia*), the erect stems generally unbranched; inflorescences never on special laf-bearing flowering branches; leaves usually serrate or obscurely crenate, rarely entire (*A. chinensis* and *A. triflora*) without albuminous marginal glands; sepals never imbricate. § *Bladhia.*

Key to the eastern Asiatic species of Ardisia.

a^1. Erect woody trees, shrubs, or undershrubs, rarely herbaceous (*A. primulifolia*), generally branching at least with special lateral flowering branches, bearing a few leaves or leaflike bracts, or if unbranched, leaves with distinctive albuminous marginal glands; leaves generally entire, sometimes crenate or undulate (serrate in *A. cornudentata*) with marginal glands in the teeth or sinuses.

b^1. Leaves without albuminous glands.

c^1. Sepals strongly dextrorsely imbricate during anthesis, densely punctate; sepals broadly ovate, obtuse or rounded, or if only moderately imbricate and punctate and somewhat acute, inflorescences pyramidal-paniculate, on ends of rather stiff, smooth, special flowering branches ..... § *Tinus.*

d^1. Inflorescences axillary, not pyramidal-paniculate.

e^1. Branchlets thick, rough, with large leaf scars; peduncles and pedicels not slender ..... *A. solanacea.*

e^2. Branchlets slender and smooth, with small leaf scars; peduncles and pedicels slender to filiform ..... 2. *A. arborescens.*

d^2. Inflorescences pyramidal-paniculate, terminal on rather large, thick, smooth, special flowering branches ..... 3. *A. humilis.*

c^2. Sepals not strongly dextrorsely imbricate during anthesis, with or without punctate glands, acute or obtuse, generally not broadly ovate.

d^1. Inflorescences truly terminal, pyramidal-paniculate (not umbellate or corymbose on special leaf-bearing branches)..... § *Acrardisia.*

e^1. Axis of inflorescences slender, the branches reflexed; secondary nerves diverging at a very wide angle, curved-ascending; flowers 2 mm long ..... 4. *A. retroflexa.*

e^2. Axis of inflorescence not slender, branches not reflexed; secondary nerves not diverging at a very wide angle; flowers 5 mm long ..... 3. *A. humilis.*[26]

d^2. Inflorescences lateral or in axils of normal or greatly reduced leaves or bracts, sometimes appearing subterminal but if so, not pyramidal-paniculate, sometimes on ends of special flowering branches ..... § *Akosmos.*

[26] This species belongs in § *Tinus*, but some specimens bear scarcely imbricate sepals.

*e*¹. Flowers in paniculate inflorescences.
*f*¹. Leaves obovate or broadly oblanceolate, coriaceous, densely ferruginous-lepidote beneath ..... 5. *A. densilepidotula.*
*f*². Leaves lanceolate, chartaceous or membranous, sometimes lepidote beneath but not densely so ..... 6. *A. yunnanensis.*
*e*². Flowers in umbellate, cymose, or corymbiform, not paniculate inflorescences.
*f*¹. Leaves densely stellate-pubescent beneath..... 7. *A. stellata.*
*f*². Leaves not densely stellate-pubescent beneath.
*g*¹. Leaves without distinct uniform marginal nerve.[29]
*h*¹. Inflorescences puberulent; lateral nerves diverging at nearly a right angle..... 6. *A. yunnanensis.*
*h*². Inflorescences glabrous; lateral nerves not diverging at a right angle.
*i*¹. Inflorescences axillary on normal leafy branches, without leaves or distinct leaflike bracts beneath inflorescence or its branches; sepals acute. 8. *A. obtusa.*
*i*². Inflorescences on ends of special lateral flowering branches, usually bearing 1 to 3 normal or slightly reduced leaves near apex; sepals obtuse.
*j*¹. Shrub up to 3 m high; leaves chartaceous with 10 to 15 pairs of prominent lateral nerves, veinlets finely raised-reticulate ..... 9. *A. brunnescens.*
*j*². Undershrub 20 to 30 cm high; leaves coriaceous with about 8 pairs of inconspicuous lateral nerves, veinlets obscure ..... 10. *A. porifera.*
*g*². Leaves with distinct uniform marginal nerves.[30]
*h*¹. Leaf blades narrowly or very slenderly elliptic- or oblong-lanceolate, apex long and slenderly acuminate.
*i*¹. Calyx not punctate or very sparingly so; inflorescences puberulent, at least when young; western. 11. *A. salicifolia.*
*i*². Calyx sparingly or densely punctate; inflorescence glabrous or lepidote; eastern.
*j*¹. Sepals ovate, acute, about 1 mm long, obscurely ciliate or eciliate; inflorescences usually over 2 cm long ..... 12. *A. quinquegona.*
*j*². Sepals lanceolate, over 1 mm long, distinctly ciliate; inflorescences 1.5 cm long or less.
*k*¹. Sepals 1.5 mm long, triangular-lanceolate, sharply acute. 12*a*. *A. quinquegona* var. *hainanensis.*
*k*². Sepals 2 to 3 mm long, oblong-lanceolate, acute or obtuse.... 12b. *A. quinquegona* var. *oblonga.*

[29] The marginal nerves of *A. quinquegona* are often very obscure.

[30] The marginal glands are easily overlooked in *A. mamillata* because of the dense crisped-villose hairs rising from tuberculate processes on the upper surface, from simple bases on the lower surface.

h^2. Leaf blades lanceolate or ovate, not narrowly so, apex not long and slenderly acuminate.
i^1. Apex of leaves broadly acute or obtuse, sometimes rounded, rarely broadly acuminate; branches rather thick; sepals entire or sparingly ciliate. 14. *A. sieboldii.*
i^2. Apex of leaves acute or acuminate, not broadly so; branches rather slender; sepals distinctly ciliate.
j^1. Inflorescences puberulent.
k^1. Sepals triangular-ovate; leaves 10 cm long or longer; western. ..... 15. *A. tenera.*
k^2. Sepals triangular-lanceolate, thin; leaves 8 cm long or less; eastern. 12*a*. *A. quinquegona* var. *hainanensis.*
j^2. Inflorescences glabrous or lepidote.
k^1. Peduncles or special flowering branches bearing a few leaves or leaflike bracts. 16. *A. fordii.*
k^2. Peduncles or special flowering branches not bearing leaves or leaflike bracts.
l^1. Fruits frequently 5-cornered, not distinctly longitudinally ribbed; sepals more or less punctate; veinlets not evident. 12. *A. quinquegona.*
l^2. Fruits globose, distinctly longitudinally ribbed; sepals not punctate; veinlets evident, reticulate ..... 13. *A. depressa.*
b^2. Leaves with albuminous marginal glands..... § *Crispardisia.*
c^1. Sepals distinctly imbricate, at least in flower, broadly ovate to suborbicular.
d^1. Sepals very densely black-punctate; special flowering branches usually about 30 cm long, leaves not confined to upper part. 17. *A. virens.*
d^2. Sepals not very densely black-punctate; special flowering branches rarely 25 cm long, leaves confined to upper part.
e^1. Margin of leaves serrate..... 18. *A. cornudentata.*
e^2. Margin of leaves entire or merely undulate-crisped.
f^1. Sepals orbicular, not veined on inner surface; leaves 4 to 10 cm long ..... 19. *A. crassinervosa.*
f^2. Sepals oblong-ovate, strongly veined on inner surface; leaves 10 to 16 cm long..... 20. *A. nervosa.*
c^2. Sepals not distinctly imbricate.
d^1. Lower surface of leaves or at least petiole distinctly puberulent or villose.
e^1. Inflorescences densely villose or hirsute; sepals equaling or exceeding petals or fruit.
f^1. Leaves glabrous on upper surface, except sometimes on midrib.
g^1. Leaf blades elliptic-lanceolate, ovate or obovate, 2.5 cm wide or wider.

h^1. Stems 50 cm high or higher, not distinctly slender; leaves elliptic-lanceolate or rarely ovate..... 21. *A. villosa.*

h^2. Stems about 25 cm high, rather slender; leaves broadly elliptic-ovate..... 21*b*. *A. villosa* var. *latifolia.*

g^2. Leaf blades oblanceolate, 1.2 to 2.5 cm wide. 21*c*. *A. villosa* var. *oblanceolata.*

f^2. Leaves villose on upper surface.

g^1. Hairs on upper surface not rising from tuberculate processes.

h^1. Stems elongate; leaves not rosulate; plants woody.

i^1. Leaves elliptic-lanceolate, acute or cuneate at base. 21*c*. *A. villosa* var. *oblanceolata.*

i^2. Leaves broadly elliptic-ovate, obtuse or rounded at base. 22. *A. villosoides.*

h^2. Stems practically wanting, plants acaulescent; leaves rosulate; plants herbaceous..... 24. *A. primulifolia.*

g^2. Hairs on upper surface dense, rising from tuberculate processes ..... 23. *A. mamillata.*

e^2. Inflorescences puberulent; sepals shorter than petals or fruit.

f^1. Leaves 6 cm long or less..... 25. *A. affinis.*

f^2. Leaves over 6 cm long.

g^1. Lower surface of leaves pilose with crisped hairs.

h^1. Anthers black-punctate on back; inflorescence compound-umbellate; sepals generally punctate. 26. *A. corymbifera.*

h^2. Anthers not black-punctate on back; inflorescences corymbose; sepals not at all black-punctate. 30. *A. conspersa.*

g^2. Lower surface of leaves glabrous or puberulent, hairs not crisped.

h^1. Marginal nerve conspicuous, not close to margin. 28. *A. punctata.*

h^2. Marginal nerve not conspicuous, sometimes undulate and irregular or wanting.

i^1. Sepals and lower surface of leaves black-punctate; blades chartaceous.

j^1. Stem not distinctly slender, over 15 cm high; leaves broadly acute or obtuse at base. 28*a*. *A. punctata* var. *latifolia.*

j^2. Stem slender, about 15 cm high; leaves generally rounded or obtuse at base..... 29. *A. brevicaulis.*

i^2. Sepals and lower surface of leaves not black-punctate; blades membranous ..... 31. *A. caudata.*

d^2. Lower surface of leaves and petiole glabrous or nearly so.

e^1. Flowering branches with leaves or leaflike bracts confined to upper third or less, or these wanting.

f^1. Leaves 6 cm long or less, special flowering branches 4 cm long or less, generally bearing one or two leaves or leaflike bracts ..... 25. *A. affinis.*

f^1. Leaves over 6 cm long, special flowering branches over 4 cm long, with or without leaves or leaflike bracts.
g^1. Marginal nerve not distinct.
h^1. Lateral nerves 5 to 12 pairs, or if as many as 16, blade obscurely punctate beneath.
i^1. Leaves elliptic- or oblong-lanceolate, not narrowly lanceolate.
j^1. Sepals 3 to 4 mm long..... 31. *A. caudata.*
j^2. Sepals 2 mm long or less.
k^1. Leaves elliptic-lanceolate to narrowly lanceolate, not over 4 cm wide..... 36. *A. crispa.*
k^2. Leaves elliptic-lanceolate to oblanceolate, 4 cm wide or wider.
l^1. Sepals ovate to oblong ovate, not punctate; stem rather thick and rough.
36*a*. *A. crispa* var. *amplifolia.*
l^2. Sepals broadly ovate, punctate, though obscurely so; stem not thick, smooth.
41. *A. olivacea.*
i^2. Leaves very narrowly lanceolate.
36*b*. *A. crispa* var. *Dielsii.*
h^2. Lateral nerves 12 to 20 pairs; blade distinctly punctate, at least beneath.
i^1. Undershrubs with stem about 15 cm high.
29. *A. brevicaulis.*
i^2. Shrubs usually over 50 cm high.
j^1. Sepals sparsely punctate; flowers 3 to 4 mm long; lower surface of leaves diffusely raised-puntate.
33. *A. crenata.*
j^2. Sepals abundantly black-punctate; flowers 7 mm long; lower surface of leaves thickly black-punctate, punctations not raised.... 38. *A. shweliensis.*
g^2. Marginal nerve distinct.
h^1. Inflorescences glabrous.
i^1. Branches and pedicels of paniculate inflorescences very slender, subfiliform; blade membranous.
40. *A. filiformis.*
i^2. Branches and pedicels of corymbose, cymose, or umbellate inflorescences not distinctly slender; blade chartaceous or coriaceous.
j^1. Leaves narrowly lanceolate to linear; sepals 3 to 4 mm long or less, very densely black-punctate.
39. *A. ensifolia.*
j^2. Leaves not narrowly lanceolate to linear; sepals 2 mm long or less, not very densely black-punctate.
k^1. Lower surfaces of leaves rarely raised-punctate beneath; flowers 7 to 8 mm long.
35. *A. hanceana.*
k^2. Lower surface of leaves generally raised-punctate beneath; flowers 4 to 6 mm long.

l^1. Leaves green on both sides when mature.
33. *A. crenata.*
l^2. Leaves purplish or reddish beneath when mature.
34. *A. bicolor.*
h^2. Inflorescences puberulent.
i^1. Base of leaves acute, the blades obscurely or sparingly punctate except along margin..... 28. *A. punctata.*
i^2. Base of leaves obtuse or rounded, the blades generally distinctly punctate on both surfaces
29. *A. brevicaulis.*
e^2. Flowering branches with leaves scattered along more than upper third.
f^1. Anthers not punctate; fruit generally not punctate or with minute punctations.
g^1. Flowers 7 to 8 mm long; sepals 3 to 4 mm long; leaves ovate, or if lanceolate, membranous.
h^1. Leaves chartaceous; veinlets distinct, reticulate; sepals obtuse or rounded; bracts persistent.
27. *A. roseiflora.*
h^2. Leaves membranous; veinlets obscure, not evidently reticulate; sepals acute; bracts deciduous.
31. *A. caudata.*
g^2. Flowers 6 mm long or less; sepals 3 mm long or less; leaves lancolate, chartaceous.
h^1. Inflorescences generally glabrous, if sparingly puberulent, leaves not ferruginous-lepidote beneath; eastern ..... 32. *A. elegans.*
h^2. Inflorescences minutely puberulent, at least when young; leaves ferruginous-lepidote beneath; western.
37. *A. maculosa.*
f^2. Anthers and fruit distinctly black-punctate, punctations not distinctly small.
g^1. Inflorescences puberulent..... 26. *A. corymbifera.*
g^2. Inflorescences glabrous.
h^1. Sepals scattered-punctate ..... 33. *A. crenata.*
h^2. Sepals densely punctate..... 17. *A. virens.*
a^2. Plants suffrutescent, sometimes repent undershrubs, never herbaceous, erect stems generally unbranched; inflorescences never on special leaf-bearing flowering branches; leaves usually toothed, rarely entire (*A. chinensis, A. triflora*) without albuminous marginal glands; sepals never imbricate ..... § *Bladhia.*
b^1. Leaves alternate, glabrous, usually entire, never with conspicuous teeth.
c^1. Lateral veins rather numerous, uniting in a marginal nerve; leaves not over 6 cm long..... 42. *A. chinensis.*
c^2. Lateral veins about 12 pairs, not uniting in a marginal nerve; leaves over 6 cm long ..... 43. *A. triflora.*
b^2. Leaves opposite or subverticillate, rarely alternate, conspicuously toothed, glabrous or hairy.

c^2. Stems usually elongate with two or more equally prominent nodes and internodes; leaves 7 cm long or less, if slightly longer not densely papillose-pilose, never cordate at base.

d^1. Stems, peduncles, petioles, and lower leaf surfaces pilose with long crisped hairs; sepals lanceolate, nearly equaling petals.

e^1. Leaves averaging 3.5 cm long, not over 5 cm long; flowers 3 mm long or less; mostly in coastal provinces..44. *A. pusilla.*

e^2. Leaves generally over 5 cm long, ranging up to 10 cm long or longer; mostly in inland provinces..... 45. *A. Faberi.*

d^2. Stems, peduncles, and petioles pubescent with minute or closely appressed, ferruginous, not crisped hairs; sepals ovate or lanceolate, much shorter than petals.

e^1. Leaves glabrous on both surfaces or minutely puberulent on midrib beneath, shining above, the margins finely serrate.

f^1. Leaf blades elliptic-ovate or broadly elliptic-lanceolate; sepals ovate ..... 46. *A. japonica.*

f^2. Leaf blades lanceolate to narrowly lanceolate; sepals triangular, acute ..... 46*a*. *A. japonica* var. *angusta.*

e^2. Leaves minutely appressed-pubescent and dull green above; appressed-pubescent beneath, especially on veins and veinlets, margins erose-dentate with slender teeth. 47. *A. ordinata.*

c^3. Stems usually short, with one prominent cluster of leaves; leaves 7 to 30 cm long, or if shorter, bases cordate.

d^1. Leaves 6 cm long or shorter, cordate at base, serrate, the teeth broadly triangular[31] ..... 48. *A. Maclurei.*

d^2. Leaves over 6 cm long, rarely cordate at base, margin erose-dentate or serrate, with lanceolate-apiculate teeth.

e^1. Midrib densely shaggy-villose, with long ferruginous hairs; lateral nerves perpendicular to midrib or nearly so, 25 pairs or more ..... 49. *A. scalarinervis.*

e^2. Midrib tomentose or glabrous but not shaggy-villose, hairs more or less appressed; lateral nerves not perpendicular to midrib, or if so, not more than 15 pairs.

f^1. Leaves much paler and glabrous beneath or slightly grayish pubescent ..... 50. *A. gigantifolia.*

f^2. Leaves ferruginous- or fuscous-hirsute or puberulent beneath especially on nerves and midrib.

g^1. Main stem rather thick, closely covered with large leaf scars, glabrous; leaves sessile or with broadly winged petioles ..... 51. *A. Silvestris.*

[31] When the marginal glands, characteristic of § *Crispardisia*, are overlooked in *A. mamillata*, this species keys to this point but may easily be separated from *A. Maclurei* by the characteristic tuberculate processes on the upper leaf surfaces from which the hairs rise, and by the noncordate leaf bases.

*g*². Main stem not thick and rough with large leaf scars, tomentose, strigose or glabrous; leaves petiolate.

*h*¹. Leaves not rugose; lateral nerves about 15 pairs, uniting in a more or less undulate marginal nerve.

52. *A. replicata.*

*h*². Leaves rugose; lateral nerves about 8 pairs, not uniting in a marginal nerve ..... 53. *A. pubivenula.*

Section TINUS (Burm.) Mez

Erect woody branching shrubs or small trees; leaves entire, without marginal glands; inflorescences axillary; sepals strongly dextrorsely imbricate, at least in bud, broadly ovate, obtuse or rounded, densely punctate.

1. ARDISIA ARBORESCENS Wall.

Ardisia arborescens WALL., List no. 2289 (1830); Trans. Linn. Soc. 17 (1834) 120; DC., Prodr. 8 (1844) 131. Based on *Wallich 2289* in the Kew herbarium. A photograph of the type has been examined, and the type specimen was checked by Mr. E. P. Killip at the request of the writer.

A shrub up to 2 m high, glabrous throughout, the branchlets rather slender, grayish brown; leaves with channelled petiole (about 1 cm), the blade chartaceous, oblanceolate, cuneate at base, acuminate at apex, 9 to 19 cm long, 2 to 5 cm wide, entire, about equally green on both sides, not punctate, the midrib prominent beneath, the lateral nerves about 14 to 20 pairs, inconspicuous above, raised beneath, curved-ascending, not uniting in a distinct marginal nerve, the veinlets obscurely reticulate; inflorescences axillary, subumbellate or racemose, simple, about 12-flowered, 4 to 10 cm long, the peduncle slender, 2 to 7 cm long, the pedicels up to 2 cm long; flowers red, 5 to 7 mm long; sepals strongly dextrorsely overlapping, shortly united at base, broadly ovate, obtuse or rounded, subcordate at base, 3 mm long; somewhat veined, punctate, the margin somewhat scarious, minutely ciliate or entire in fruit; petals, anthers lanceolate, sharply acute to acuminate, black-punctate on black; pistil equaling petals; fruit 5 to 8 mm in diameter, reddish or blackish, punctate.

Southwestern China, Burma, Siam, and Indo-China.

YUNNAN: *Henry 11629* (*A, Y*), *12123* (*W*), *12123A* (*A, M, Y*); *Y. Tsiang 12269* (*Su*), *12469* (*Su*); *C. W. Wang 74609* (*A, W*), *76480* (*A*), *76583* (*A, W*).

2. ARDISIA SOLANACEA Roxb.

Ardisia solanacea ROXB., Pl. Coromand. 1 (1795) 27, *pl. 27;* Fl. Ind. ed Carey 2 (1824) 269.[32] Originally described from India without mention of specimens.

A shrub or tree up to 6 m high, glabrous throughout, branchlets thick, smooth and green when young, becoming grayish and much wrinkled with large leaf scars; leaves petiolate (1 to 2 cm), the blade chartaceous elliptic-lanceolate or oblanceolate, acute and narrowly decurrent on petiole at base, acute, or broadly obtuse or subrounded at apex, about 15 cm long, 4 cm wide, ranging from 12 to 20 cm long, 4 to 7 cm wide, entire with reflexed edge, dull green on both surfaces, paler and rarely obscurely punctate beneath, the midrib prominent beneath, the lateral nerves about 20 pairs, fine, slightly raised above, more so beneath, curved-ascending, not forming a definite lateral nerve, the veinlets sometimes slightly raised-reticulate; inflorescences axillary, compact-racemose, 3 to 8 cm long, the peduncle up to 5 cm long, not distinctly slender, the bracts about 3 mm long, lanceolate, acute or obtuse, ciliate, more or less punctate, deciduous in fruit, the pedicels 1 to 15 cm long, not distinctly slender; flowers 6 mm long, pink; sepals dextrorsely overlapping, shortly united at base or almost free, the lobes broadly ovate to reniform, rounded at apex, about 3 mm long, densely black-punctate with round glands, subentire, crenulate or ciliate, the margin scarious; petals broadly ovate, obtuse or acute, about 6 mm long, finely punctate; stamens nearly equaling petals, the anthers oblong-lanceolate, slender, acute, densely black-punctate on black; pistil about equaling petals; fruit 7 mm in diameter, blackish, densely and finely black-punctate.

Southwestern China to Ceylon and Singapore.

YUNNAN: *Forrest 29386* (*E, W*); *Henry 9536* (*W, Y*), *9536A* (*A*), *13773* (*Y*);[33] *Rock 2508* (*A, W*), *2605* (*A, W*); *H. T. Tsai 53200* (*A*), *55807* (*A*); *C. W. Wang 72750* (*A*), *73122* (*A, W*), *75487* (*A, W*), *76349* (*A, W*), *76706* (*A, W*), *77655* (*A, W*), *79573* (*A, W*), *80966* (*A, W*).

Although the type of this species has not been examined, the specimens here cited closely resemble a few other specimens from India, Roxburgh's original description, and in part the colored drawing accompanying this original description. How-

[32] The description in Flora Indica is a copy of that in Plants of the Coast of Coromandel.

[33] A photograph of the specimen at Kew cited in S. T. Dunn (13, p. 419) as *A. lanceolata* Roxb.

ever, Roxburgh's description does not mention the punctation in the flowers, especially that of the sepals, nor the ciliate margins of the latter, characters which are prominent in the available specimens. So far as known there is no type specimen, the earliest specimen attributed to this species being that in Wallich's List, *no. 2283a, k,* which has not been seen. The specimens here cited closely agree also with Mez's description and drawing and with Sims's illustration.(56) Roxburgh's drawing accompanying the original description does not agree with his description in the shape of the sepals. Sims points out that the tripartite inflorescence is not the normal form, thus strengthening the belief that the specimens at hand represent Roxburgh's species. Mez states that Willdenow's interpretation of *Ardisia solanacea*(63, 1 p. 1063) is erroneous, his species being *Ardisia humilis,* but as Willdenow cites Roxburgh's description, and since Mez's own description is inadequate to prove the contrary, Mez's interpretation must be rejected. Until a larger series of specimens from India and the Wallich specimens can be studied, the application of this name to Chinese specimens must remain in some doubt.

3. **ARDISIA HUMILIS** Vahl.

Ardisia humilis VAHL, Symb. Bot. 3 (1794) 40. Based on a collection by Dahl from Hainan, now in the Copenhagen herbarium. The type has been examined and critically discussed, especially Mez's misinterpretation, by E. D. Merrill.(39, p. 50; 40, p. 298)

Pyrgus racemosa LOUR., Fl. Cochinch. (1790) 121; op. cit. ed. Willd. (1793) 149. Originally described from Cochin China. The type at the British Museum has been examined by E. D. Merrill.(40, p. 298)

Ardisia Pyrgus ROEM. & SCHULT., Syst. Veg. 4 (1819) 518. Based on *Pyrgus racemosa* Lour.

Tinus racemosa KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Pyrgus racemosa* Lour.

Tinus humilis KUNTZE, op. cit. p. 405. Based on *Ardisia humilis* Vahl.

Ardisia hainanensis MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 138. Based on *B. C. Henry 2* and *A. Henry 8017,* both from Hainan, at the Berlin and Kew herbaria (erroneously cited as *Henry 2, 8017*). The Kew specimen of *A. Henry 8017* has been examined by E. D. Merrill.(39, p. 50) A duplicate of *B. C. Henry 2* at the New York Botanical Garden has been examined by the writer.

Ardisia racemosa MEZ, op. cit. 138 (not Spreng. 1825). Based on *Pyrgus racemosa* Lour.

A semiwoody shrub 1 to 5 m high, glabrous throughout, the branchlets somewhat thickened, greenish or grayish; leaves petiolate (0.5 to 1 cm), the blade coriaceous, oblanceolate to elliptic-ovate, acute to cuneate at base, acute, subacuminate, or obtuse

at apex, usually about 18 cm long, 4 to 7.5 cm wide, sometimes 30 cm long, 8 cm wide, entire, dull green above, paler and somewhat brownish beneath and pierced by numerous minute pores (visible under a strong lens), glabrous, the midrib prominent beneath, the lateral nerves about 12 pairs, not uniting into a marginal nerve; inflorescences pyramidal-paniculate with thickened axis, many-flowered, 10 to 20 cm long, with primary branches up to 3 cm long, terminal on special lateral branches of about equal length, these generally with a few leaves, usually only above middle, the pedicels about 6 mm long; flowers pink or purplish, about 5 mm long; sepals united about $\frac{1}{3}$ their length, the lobes ovate, acute, slightly overlapping at base, 1 to 2 mm long, entire, glabrous, not punctate; petals ovate, acute, not at all or obscurely punctate, glabrous; stamens nearly equaling petals, the anthers oblong-lanceolate, acute to apiculate, distinctly black-punctate on back; pistil equaling petals; fruit about 6 mm in diameter, brownish, at least sometimes abundantly glandular-punctate, the glands longitudinally elongate.

Indo-China and Hainan.

HAINAN: *N. K. Chun & C. L. Tso 44663* (*Y*); *Ford*, May 4, 1893 (*A, W, Y*); *H. Fung 20023* (*A, Y*), *2315* (*A, Na, W*); *B. C. Henry 2* (*Y*); *Hongkong Bot. Gard., Herb.* (*?*) *2174* (*A*); *F. C. How 71386* (*A, W*), *71803* (*A, W*); *S. K. Lau 5868* (*A, W*); *H. Y. Liang 61503* (*A, W, Y*), *62894* (*W, Y*), *65434* (*W, Y*); *C. L. Tso 23054* (*A, W, Y*); *C. Wang 34333* (*W, Y*).

This species is recognized by its generally oblanceolate or elliptic-ovate, pale olive-green leaves and pyramidal-paniculate inflorescences with rather thick main axes on the ends of rather long, special flowering branches. The base of the inflorescence is usually marked off from the stem as if it were in the axil of a terminal leaf scar.

Section ACRARDISIA Mez

Erect, woody, branching shrubs (so far as habit is known); leaves entire, without marginal glands; inflorescences terminal, apparently on ends of normal branches; sepals not strongly dextrorsely imbricate, acute or obtuse.

4. ARDISIA RETROFLEXA Walker sp. nov. Text fig. 7.

Frutex 2 m altus, perglaber, ramulis gracilibus junioribus dense lepidotis et atrofuscis canescentibus; folia chartacea, 8 ad 15 cm longa, 2 ad 4 cm lata, elliptico-lanceolata, apice acuta vel acuminata, margine plana, nervibus lateralibus circa 15 ad 18 jugis late divergentibus, subtus parum elevatis, venulis vix manifestis; inflorescentiae paniculatae, terminales, circa 12 cm

FIG. 7. *Ardisia retroflexa* Walker sp. nov. *a*, branchlet with inflorescences, × ½; *b*, calyx and pistil, × 5; *c*, stamen, back view, × 5; *d*, corolla and stamens, × 5; *e*, fruit, × 5. Parts *a* to *d* drawn from th type, *S. K. Lau 26302* (*W*); part *e* drawn from C. C. C. *18151* (*W*).

longae, pedunculo et ramulis gracilibus rusco-lepidotis, ramulis inflorescentiae reflexis; flores albi, pedicellis acervatim subumbellati; sepala 1 ad 1.5 mm longa, ovata, acuta, non punctata, crenulato-ciliata; petala circa 2 mm longa, non punctata; stamine petalis fere aequalia, antheris ovatis, acutis, dorso glanduloso-punctatis; pistillum petalis aequale; fructus 5 mm diametro, sparse punctatus, manifeste longitudinaliter striatus.

A branching shrub 2 m high, glabrous throughout, the branches rather slender, densely fuscous-lepidote and dark brownish when young, becoming gray; leaves with strongly channeled slender petiole (0.4 to 1 cm), the blade chartaceous, elliptic-lanceolate, acute at base, acute or acuminate at apex, 8 to 15 cm long, 2 to 4 cm wide, entire, "deep green" above when fresh, paler beneath, the midrib prominently raised beneath, the lateral nerves about 15 to 18 pairs, widely diverging from midrib, curved-ascending, slender, slightly raised beneath, more or less united near margin, the veinlets scarcely visible; inflorescences terminal, paniculate, about 12 cm long, 10 cm wide, the peduncle and branches slender, fuscous-lepidote, the latter reflexed, the slender pedicels 3 to 10 mm long in subumbellate clusters of 4 to 8 on ends of branches of inflorescence; flowers white, 2 mm long; sepals ovate, acute, 1 to 1.5 mm long, crenulate-ciliate, not punctate; petals ovate, acute, not punctate; stamens nearly equaling petals, the anthers ovate, acute to subapiculate at apex, glandular-punctate on back; pistil equaling petals, the style equaling globose ovary; fruit 5 mm in diameter, red or brownish, distinctly longitudinally striate, sparingly punctate.

Type in the United States National Herbarium, *no. 1717768,* collected by *S. K. Lau, no. 26302,* in flower in dense shade at Bak-sa, Hainan, April 17, 1936, for Sun Yatsen University; duplicate at the Arnold Arboretum. An additional specimen seen is *Lingnan University* (*Canton Christian College*) *no. 18151* (*Tsang & Fung field no. 617*), in fruit, collected in a forest on the summit of Hung Mo Shan, Hainan, August 2, 1929 (*A, Su, W, Y*).

This species is distinguished by the terminal panicle with slender, conspicuously reflexed branches, and by the elliptic-lanceolate leaves with lateral veins diverging from the midrib at a wide angle. Several specimens from Indo-China, which have been referred by J. Pitard to *A. colorata* Roxb., are identical or nearly so with the specimens cited above. It seems advisable, however, to consider this as a new species, at least until the exact limits of Roxburgh's species can be determined.

Section Akosmos Mez

Erect, woody, branching shrubs or undershrubs; leaves entire, without marginal glands; inflorescences axillary or sometimes terminal on special lateral flowering branches with a few leaves or leaflike bracts near apex; sepals not strongly dextrorsely imbricate, acute or obtuse.

5. ARDISIA DENSILEPIDOTULA Merr.

Ardisia densilepidotula Merr., Lingnan Sci. Journ. 6 (1930) 284. Based on *Canton Christian College* (Lingnan University) *16260* (*Tsang Wai-tak field no. 761*) from Sha Po Shan vicinity, Hainan, in the herbarium of the University of California. The type has been examined.

A small tree 3 to 8 m high, the somewhat thickened branchlets, inflorescences, and lower surfaces of leaves densely ferruginous-lepidote; leaves with thick, narrowly winged petiole (1 cm), the blade coriaceous, obovate or broadly oblanceolate, cuneate and narrowly decurrent at base, broadly acute or obtuse at apex, usually 13 to 16 cm long, 4 to 6 cm wide, sometimes up to 24 cm long, 10 cm wide, entire, with usually reflexed margin, brownish on both sides, slightly paler beneath; midrib prominently raised beneath, the lateral nerves very numerous, fine, inconspicuous, straight, uniting into a marginal nerve; inflorescences subterminal, bipinnately paniculate, 10 to 14 cm long, the flowers subumbellate on ends of primary branches, the peduncle 4 to 7 cm long, the pedicels 3 to 5 mm long; flowers red, 3 mm long; sepals united about $\frac{1}{3}$ their length, the lobes narrowly triangular-ovate to lanceolate, acute, 1 to 1.5 mm long, ciliate, not punctate, glabrous; petals ovate, obtuse or rounded, not punctate, glabrous; stamens nearly equaling petals, the filaments distinct, up to 1 mm long, the anthers ovate, apiculate, not punctate nor black on back; pistil longer than petals, the style exerted, 1 to 2 mm in bud; fruit 6 mm in diameter, not punctate.

Hainan: *C. C. C. 15883* (*A, C, NA, W*), *16260* (*A, C, NA, W*), *17484* (*A, C, W*), *17971* (*A, W, Y*); *N. K. Chun & C. L. Tso 43713* (*A, Y*), *43965* (*A, Y*), *44375* (*A, Y*); *H. Fung 20335* (*A*); *F. C. How 71019* (*A, Y*), *72778* (*A, W*), *73351* (*A*); *F. C. How & N. K. Chun 70165* (*A, W, Y*); *S. K. Lau 32* (*A, W*), *331* (*A, W*), *1500* (*A, Y*), *1838* (*A, Y*), *3721* (*A*), *5069* (*A, W*), *26691* (*A, W*), *27475* (*A, W*); *H. Y. Liang 61946* (*W, Y*), *62602* (*W, Y*), *62776* (*W, Y*), *63522* (*W, Y*), *64238* (*W, Y*),

65022 (*W, Y*), *65162* (*W, Y*); *C. Wang 32922* (*A, W, Y*), *33563* (*W, Y*), *34222* (*W, Y*), *34256* (*W, Y*), *34736* (*W, Y*).

This species is easily recognized by its densely lepidote lower leaf surfaces.

6. ARDISIA YUNNANENSIS Mez.

Ardisia yunnanensis MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 107. Based on *Henry 13095* from Yunnan in the Berlin herbarium. Duplicates have been examined.

This species is possibly the same as *A. floribunda* Wall., 1824, (not *A. floribunda* Roem & Schult., 1819), *A. neriifolia* Wall. 1834, and *A. thyrsiflora* D. Don, 1825, but as no authentic specimens of these have been seen except photographs of the cotypes of the first two at Kew, not the types at Geneva, it seems advisable to defer any change of name.

A shrub or tree 2 to 9 m high, the branchlets, inflorescences, and petioles densely ferruginous-lepidote when young; leaves petiolate (about 1 cm), the blade chartaceous, elliptic or oblong-lanceolate to oblanceolate, acute and narrowly decurrent on petiole at base, acuminate at apex, 12 to 22 cm long, 2 to 4.5 cm wide, entire, dull green above, paler, brownish, ferruginous-lepidote, and more or less clearly raised-punctate beneath, the midrib prominent beneath, the lateral nerves numerous (more than 20 pairs), fine, more or less raised beneath, diverging at nearly a right angle, curved-ascending from near margin, not forming a definite marginal nerve, the veinlets very obscure, reticulate; inflorescences axillary or subterminal, corymbiform to paniculate, many-flowered, 5 to 20 cm long, the peduncle up to 8 cm long, the primary branches scattered, up to 3 cm long, the bracts inconspicuous, 2 mm long, lanceolate to subulate, ciliate, the pedicels about 6 mm long; flowers white, 3 to 4 mm long; sepals united about $\frac{1}{3}$ their length or less, ovate to lanceolate, acute to subrounded, 1 to 1.5 mm long, ciliate, usually not punctate, lepidote; petals ovate, acute, sparingly or not at all punctate, glabrous; stamens nearly equaling petals, the anthers ovate or lanceolate, obtuse or acute, apiculate, blackish but not punctate on back; pistil usually longer than petals; fruit about 7 mm in diameter, brownish, not punctate, obscurely longitudinally ribbed.[34]

India to Kweichow and Kwangsi.

KWANGSI: *C. Wong 41229* (*A*).

[34] Mez describes the fruit as depressed-globose, 5-angled, reddish when fresh, black when dry.

KWEICHOW: *S. W. Teng 90902 (A).*

YUNNAN: *Henry 11994 (A, Y), 13095 (A, M, W, Y); C. W. Wang 77289 (A, W), 77369 (A, W), 78288 (A, W).*

This species is distinguished by its densely ferruginous-lepidote young branchlets and inflorescences, by the numerous lateral nerves in the leaves diverging at nearly a right angle, and by the absence of punctation in the flowers, except sometimes on the sepals.

7. ARDISIA STELLATA Walker. Text fig. 8.

Ardisia stellata WALKER, Bull. Fan Mem. Inst. Biol. 9 (1939) 155, *pl. 17.* Based on *Henry 13266* from Yuanchiang, Yunnan, in the U. S. Nat. Herb.

A shrub 3 m high, the branchlets densely and persistently ferruginous-tomentose; leaves short-petiolate (scarcely 5 mm), the blade thin-chartaceous, oblanceolate, tapering to a narrowly rounded base, tapering-acute at apex, 12 to 24 cm long, 3.5 to 7 cm wide, irregularly undulate on margin, dark green and glabrous above, densely ferruginous-pubescent beneath, the hairs stellate-branched at summit, the midrib prominently raised beneath, densely tomentose, the lateral nerves 15 to 20 pairs, prominent, raised, curved-ascending, not forming a marginal nerve, ending at margin; inflorescences axillary, compound-umbellate or cymose, 7 to 10 cm long, densely ferruginous-tomentose with stellate-branched hairs, the peduncle 4 to 6 cm long, the primary rays about 2.5 cm long, the pedicels about 5 mm long; flowers pink, scarcely 3 mm long; sepals shortly united at base, triangular-lanceolate, acute, the lobes 1.5 mm long, densely stellate-pubescent; petals broadly ovate, obtuse or rounded, not black-punctate, sometimes pubescent outside, glabrous within; stamens $\frac{2}{3}$ length of petals, the filaments almost wanting, the anthers ovate, apiculate, black-punctate on back; pistil equaling petals; fruit 4 to 5 in diameter, reddish or black, puberulent.

YUNNAN: *Henry 13226 (A, W, Y).*

This species is easily recognized by the abundant, dark-ferruginous pubescence of stellate-branched hairs on nearly all parts, except the upper surface of the leaves. The lateral nerves terminating at the margin suggest that this species belong in § *Crispardisia*, where such nerves end in resinous marginal glands, but there is at least no external evidence of the presence of such glands. The only other species known with distinctive stellate hairs like those of the present species is *A. nigropilosa* Pitard, which differs in inflorescence and sepals.

FIG. 8. *Ardisia stellata* Walker. *a*, branchlet with fruiting inflorescences, × ½; *b*, flower, viewed frow below, × 5; *c*, flower, viewed from above, × 5; *d*, stellate hairs, × 25; *e*, fruit, × 5. Drawn from the type, *Henry 13226* (*W*).

8. ARDISIA OBTUSA Mez.

Ardisia obtusa MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 104. Based on *Henry 7990* from Hainan in the Berlin herbarium. A photograph of the type has geen examined.

Ardisia pachyphylla DUNN, Kew Bull. Misc. Inf. 1912 (1912) 368. Based on a collection by Katsumata, *Hongkong Herb. no. 6680*, from the Five Finger Mountains, Hainan. A photograph of the type or a duplicate in the Kew herbarium has been examined.

A shrub 1 to 7 m high, glabrous throughout, the branchlets smooth, grayish; leaves petiolate (up to 7 mm), the blade chartaceous or subcoriaceous, oblanceolate or obovate, acute or cuneate at base, broadly acute or subacuminate to obtuse or subrounded at apex, generally 6 to 10 cm long, 2 to 4 cm wide, sometimes the lower leaves typical, the upper leaves up to 15 cm long, 5 cm wide, or all leaves larger, entire, dull green above, distinctly paler and sometimes obscurely lepidote beneath, not punctate, glabrous, the midrib prominent beneath, the lateral nerves 8 to 15 pairs, generally obscure, sometimes distinct, curved-ascending, not uniting in a marginal nerve, the lower nerve when evident paralleling margin for half length of blade or less; inflorescences in axils of normal or much reduced leaves or bracts near ends of flowering branches, the whole cluster appearing subterminal and paniculate, each part compound-subumbellate or cymose on peduncles 3 to 6 cm long, glabrous, the pedicels generally distinctly reddish, 5 to 10 mm long or longer in fruit; flowers lavender or pink, 3 mm long; sepals shortly united at base, triangular-ovate to oblong-ovate, acute, 1 to 1.5 mm long, entire or very minutely ciliate, with or without punctate glands; petals ovate, acute, not punctate; stamens nearly equaling petals, the anthers ovate, obtuse, apiculate, black but not punctate on back; pistil equaling or exceeding petals, the style sometimes exserted in bud; fruit 4 mm in diameter, blackish, not punctate, obscurely lined.

HAINAN: *C. C. C. 8882* (*NA*), *8956* (*A, M, NA, Y*); *Chu Vong-may 36* (*C*), *106* (*C*); *H. Fung 20316* (*A, NA, W, Y*), *20333* (*A, W, Y*); *Henry 7990* (photograph) (*W, Y*); *Hongkong Bot. Gard., Herb. 6680* (photograph) (*W, Y*); *F. C. How 70530* (*A, Y*), *70574* (*A, W, Y*), *71425* (*A, W*), *72615* (*A*); *S. P. Ko 52163* (*Y*); *S. K. Lau 1186* (*A, Y*), *3421* (*A*), *5459* (*A, W*), *5815* (*A, W*), *26877* (*A, W*), *27329* (*A, W*), *27663* (*A, W*); *C. I. Lei 505* (*Y*); *H. Y. Liang 61502* (*A, Y*), *65017* (*W, Y*), *65225* (*W, Y*); *McClure 20025* (*Y*), *20036* (*A, W, Y*); *Nanking, Herb. Univ.*

6409 (*C*), *6600* (*C?*); *C. Wang 32803* (*Y*), *34474* (*W, Y*), *36256* (*W, Y*).

This species is rather variable and not easily recognized. Its leaves are not typically obtuse, as the name suggests. It may be recognized by its glabrous subterminal inflorescences in axils of leaves or greatly reduced leaves or bracts, peduncles and pedicels generally distinctly reddish, and its dull olive-green leaves without marginal nerves.

A comparison of the photographs of the types of *A. obtusa* and of *A. pachyphylla* shows differences only in the acute leaf apices of the latter. Most specimens examined have this character. Both original descriptions refer to the small size of the inflorescences but both indicate that only flowering specimens were available. Fruiting specimens have much larger panicles at the ends of the flowering branches due to the elongation of the stem and peduncles of the separate clusters.

9. ARDISIA BRUNNESCENS Walker. **Text fig. 9.**

Ardisia brunnescens WALKER, Journ. Washington Acad. Sci. **27** (1937) 198, *fig. 1.* Based on *H. B. Morse 708* (distributed by A. Henry) from Lungchow, Kwangsi, at the New York Botanical Garden.

A shrub up to 3 m high, glabrous throughout, the branchlets rather stiff, not thickened, grayish brown, somewhat wrinkled; leaves petiolate (0.5 to 1 cm), the blade chartaceous, elliptic-ovate, broadly acute at base, acute or broadly acuminate at apex, 8 to 12 cm long, 3.5 to 5 cm wide, entire, dull green above, paler and distinctly brownish beneath, neither punctate nor lepidote, the midrib prominent beneath, the lateral nerves 10 to 15 pairs, distinctly raised beneath, not uniting in a continuous marginal nerve or forming an undulate and more or less interrupted marginal nerve, the veinlets finely raised-reticulate; inflorescences compound-umbellate or paniculate-cymose, with rather slender branches, subterminal on special glabrous lateral branches, these 6 to 9 cm long, bearing two more or less reduced leaves at apex beneath inflorescences, the pedicels slender, somewhat clavate, about 1 cm long; flowers pink, 4 mm long; sepals united about $\frac{1}{3}$ their length, slightly dextrorsely overlapping at base, ovate, obtuse, 1.5 mm long, very minutely ciliate, sometimes obscurely fuscous-lepidote; petals ovate, acute, abundantly and finely punctate, glabrous outside, minutely fuscous-papillose near base within; stamens about $\frac{2}{3}$ length of petals, anthers ovate, distinctly apiculate, black but not punctate on back; pistil equaling petals;

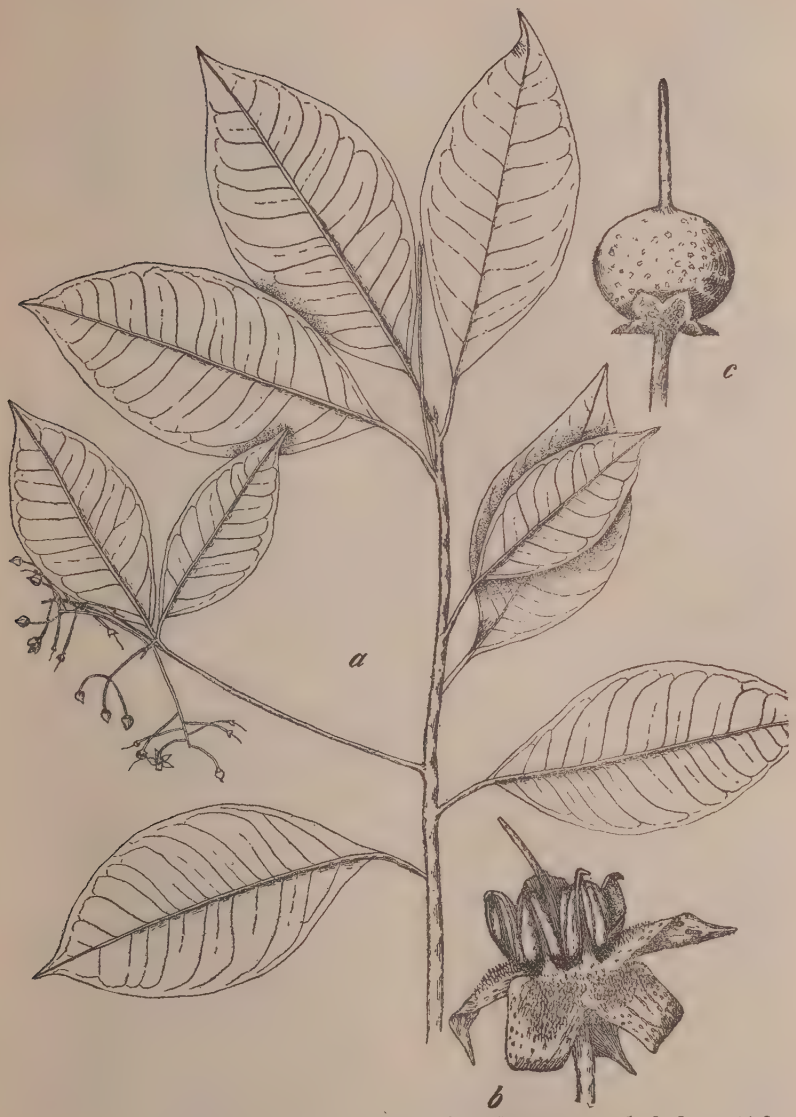

FIG. 9. *Ardisia brunnescens* Walker. *a*, branchlet with inflorescences, × ½; *b*, flower, × 3; *c*, fruit, × 3. Drawn from the type, *Morse 708* (*Y*).

fruit 6 to 7 mm in diameter, dark reddish, more or less obscurely punctate.

Southern China.

KWANGTUNG: *K. T. Wang 485* (*A*, *C*).

KWANGSI: *H. B. Morse* (distributed by A. Henry) *708*.

This species is generally recognized by its elliptic-ovate leaves with brownish lower surfaces, its 10 to 15 pairs of lateral nerves not uniting in a definite uniform marginal nerve, and its inflorescences with slender branches on ends of special flowering branches bearing one or two leaves at end.

10. ARDISIA PORIFERA Walker sp. nov. Text fig. 10.

Frutex humilis, perglaber, 20 ad 30 cm altus, caulibus e rhizomate erectis praeter ramulos speciales floriferos non ramosis; folia coriacea, 8 ad 12 cm longa, 3 ad 5 cm lata, elliptico-ovata vel obovata, apice late acuta vel obtusa, margine plana et reflexa, subtus poris numerosis minutissimis penetrata, nervibus lateralibus circa 8 jugis, non manifestis, in nervulum marginalem non confluentibus; inflorescentiae breves racemosae vel fasciculatae, in apicibus ramulorum specialium floriferorum 3 ad 7 cm longorum prope apicem foliis paucis parvis donatorum, pedicellis gracilibus, circa 5 mm longis; flores ignoti; sepala fructu ovata, obtusa, ciliata, non punctata; fructus 5 mm diametro, longitudinaliter striatus, non punctatus.

An undershrub in dense woods, 20 to 30 cm high, glabrous throughout, the stems erect from a creeping rhizome, unbranched except for special flowering branches; leaves petiolate (0.5 to 1.5 cm), the blade coriaceous, elliptic-ovate to obovate, acute at base, broadly acute or obtuse at apex, 8 to 12 cm long, 3 to 5 cm wide, entire with reflexed margin, "deep green" above when fresh, dull olive-green when dried, paler beneath and pierced by numerous very minute pores (visible under a strong lens), glabrous, the midrib prominent beneath, the lateral nerves about 8 pairs, inconspicuous, not uniting in a marginal nerve; inflorescences short-racemose (?) or subumbellate on hooked ends of special flowering branches, these 3 to 7 cm long, bearing 2 or 3 somewhat reduced leaves near apex, the pedicels slender, about 5 mm long; flowers unknown; sepals in fruit ovate, obtuse, 1.5 mm long, ciliate, not punctate; fruit 5 mm in diameter, purple or black, longitudinally striate, not punctate.

Type in the United States National Herbarium, *no. 1719221*, collected by *S. K. Lau, no. 27467*, in dense woods at Loktung, Hainan, July 9, 1936, for Sun Yatsen University: duplicate at

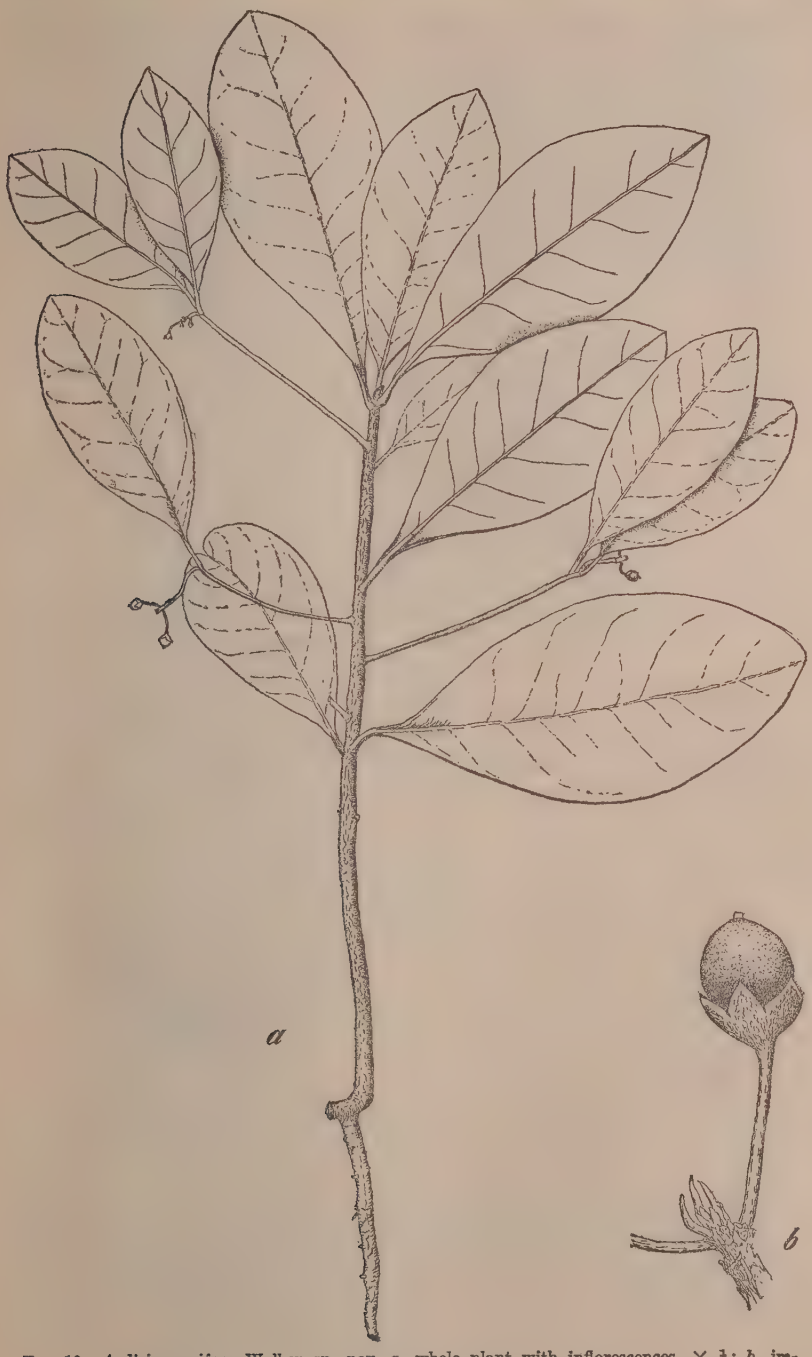

FIG. 10. *Ardisia porifera* Walker sp. nov. *a*, whole plant with inflorescences, × ½; *b*, immature fruit, × 5. Drawn from the type, *S. K. Lau 27476* (*W*).

the Arnold Arboretum. An additional specimen examined is *N. K. Chun & C. L. Tso, no. 44551* (*W, Y*) collected at Yaichow, Hainan, December 25, 1932.

The two specimens bear inflorescences with immature fruits only, not flowers. However, the vegetative characters and inflorescences show distinct differences from other known species. The leaves closely resemble those of *Ardisia humilis* Vahl in texture and color and somewhat in shape, but are smaller. The inflorescences may be corymbose in perfect specimens.

FIG. 11. *Ardisia saliciflora* Walker. *a*, branchlet with inflorescences, × ½; *b*, flower with corolla removed, × 5; *c*, corolla, × 5; *d*, stamen, side view, × 5. Drawn from the type, *Henry 11032* (*W*).

11. ARDISIA SALICIFOLIA Walker. **Text fig. 11.**

Ardisia salicifolia WALKER, Bull. Fan Mem. Inst. Biol. 9 (1939) 156, *pl. 18.* Based on *Henry 11032* from Mengtze, Yunnan, in the U. S. Nat. Herb.

A shrub 1 m high, the branchlets slender, grayish, glabrous, smooth; leaves petiolate (0.5 to 1 cm), the blade chartaceous, narrowly lanceolate, acute at base, slenderly acuminate at apex, 6 to 10 cm long, about 1.5 wide, entire, with reflexed margin, grayish-green above, brownish and more or less fuscous-lepidote beneath, glabrous, the midrib prominently raised beneath, the lateral nerves very numerous, fine, obscure, uniting in a more or less obscure marginal nerve, the veinlets reticulate; inflorescences simple-subumbellate or cymose, axillary, lateral or subterminal (but not truly terminal) on more or less special flowering branches of varying length, these usually leaf-bearing above middle, the peduncle and pedicels very slender, about 1 cm long in flower, usually becoming much longer in fruit, minutely fuscous puberulent when young, becoming glabrous; flowers pink, 3 mm long; sepals united about $\frac{1}{3}$ their length, triangular-ovate, acute, 1 mm long, ciliate, obscurely or not at all punctate, glabrous; petals ovate, acute, obscurely punctate, glabrous; stamens about $\frac{3}{4}$ length of petals, the anthers ovate, abruptly acute to apiculate, not punctate on back; pistil equaling or exceeding petals; fruit 4 mm in diameter, reddish, not punctate, obscurely longitudinally ribbed.

YUNNAN: *Henry 11032* (*A, W*), *12693* (*A, Y*).

This species seems to be most closely related to the common eastern *A. quinquegona* Blume, from which it is distinguished by the less punctate sepals, the finely puberulent rather than merely lepidote inflorescences, and by the narrower, more slenderly lanceolate leaves.

12. ARDISIA QUINQUEGONA Blume. Text fig. 12, a to c.

Ardisia quinquegona BLUME, Bijdr. Fl. Nederl. Ind. (1825) 689. Originally described from China without mention of specimens.

Ardisia pentagona A. DC., Trans. Linn. Soc. 17 (1835) 124. Based on *A. quinquegona* Blume.

Ardisia pauciflora B. HEYNE in Roxb., Fl. Ind. ed. Carey 2 (1824) 279, misapplied by Bentham in Fl. Hongk. (1861) 206. Bentham cited "Champion and others". A duplicate at the New York Botanical Garden of Champion, *Hookerian Herb. 1867*, has been examined.

Bladhia quinquegona NAKAI, Bot. Mag. Tokyo 35 (1921) (99). Based on *A. quinquegona* Blume.

A shrub or shrubby tree up to about 6 m high, the branchlets slender, grayish brown, more or less fuscous-lepidote when very young, becoming glabrous; leaves petiolate (0.5 to 1 cm), the blade chartaceous, oblong- or elliptic-lanceolate or oblanceolate, acute to tapering-acuminate at base, rather slenderly acuminate at apex, 8 to 15 cm long, 2 to 3.5 cm wide, entire, dull green above,

paler and generally fuscous-lepidote beneath, glabrous, the midrib prominent beneath; lateral nerves numerous, very fine, ob-

FIG. 12. *a* to *c*, *Ardisia quinquegona* Blume. *a*, branchlet with inflorescences, × ⅔; *b*, fruit, × 10; *c*, flower, × 10. *d*, *A. quinquegona* var. *hainanensis* Walker var. nov.; sepals and pistil, × 10. *e*, *A. quinquegona* var. *oblonga* Walker var. nov.; sepals and immature fruit, × 10. Parts *a* and *c* drawn from *C. C. C. 757* (*W*); part *b* from *T. Tanaka & Y. Shimada* (*Taihoku Imp. Univ. 11155*) (*W*); part *d* from *C. C. C. 18098* (*Y*); part *e* from *C. Wang 34215* (*W*).

scure, uniting in a marginal nerve, the marginal nerve often inconspicuous, the veinlets very obscure, not evidently reticulate; inflorescences lateral, generally axillary, cymose or subumbellate,

often appearing paniculate through falling or lack of subtending leaves on short lateral branches, generally about 3 cm long, varying from 1 to 6 cm long, the branches slender, fuscous-lepidote; the pedicels 5 to 8 mm long, slender; flowers white, 3 mm long or less; sepals shortly united at base, the lobes triangular-ovate, acute, 1 mm long, generally minutely ciliate, sparingly or rather densely punctate, glabrous; petals broadly elliptic-ovate, acute or obtuse, punctate with small dots, minutely puberulent within near base; stamens nearly equaling petals, the anthers ovate to reniform, acute to apiculate, more or less black-punctate on back; pistil usually longer than petals, the style slender, curved or frequently exserted in bud; fruit typically depressed-globose, more or less 5-angled, frequently not depressed-globose and without angles, not longitudinaly striate, not punctate.

Eastern Asia from the Liu Kiu Islands south possibly to Malaya.

Liu Kiu Islands: *L. Boehmer & Co. 84* (*A*); *Gressitt 546* (*A*), *610* (*Y*); *R. Kanehira 3231* (*Y*), *3237* (*Y*); *Wright 187* (*G, W*).

Formosa: *Faurie 306* (*A*), *1034* (*A*); *Formosa, Herb. Gov't. W173* (*A*), *224* (*C*), *21207* (*A, G*); *Gressitt 209* (*Y*), *533* (*Y*); *R. Kanehira 3135* (*Y*); *G. Nakahara* in 1905 (*Herb. Univ. Penn. no. 72063*); *Oldham 300* (*G*); *Taihoku Imp. Univ., Herb. 11155* (*W*); *T. Tanaka 1753* (*Y*); *Wilson 10241* (*W*).

Fukien: *H. H. Chung 874* (*Am*), *886* (*Am*), *910* (*Am*), *1224* (*A, Am, C*), *1282* (*A, Am, C*), *2267* (*A, Am, C*), *2460* (*Am*), *2715* (*A, Am*), *2753* (*A, Am*), *2975* (*A, Am*), *3189* (*Am*) *3269* (*A, Am*), *3698* (*A, Am*), *6734* (*A*), *6872* (*A*), *7739* (*A*), *8091* (*A*), *8470* (*A*); *Fukien Christ. Univ. 5798* (*M*), *7011* (*A*), *7051* (*M*), *7259* (*C*), *12090* (*A*); *Hongkong Bot. Gard., Herb. 2896* (*A*); *O. Warburg 5772* (*A*).

Hongkong: *C. C. C. 19471* (*Y*); *Champion, Hookerian Herb. 1867* (*Y*); *W. Y. Chun 4815* (*A*); *5117* (*A*), *6239* (*A*); *Hongkong Bot. Gard., Herb. 7487* (*A*), *8161* (*W*); *Wang & Ling 7344* (*C*); *Wilford 426* (*Y*); *Wright 205* (*G, Y*).

Hainan: *C. C. C. 7930* (*A, M, NA*), *8967* (*C, NA*), *16098* (*A, C, NA, W, Y*), *16903* (*A, C, W*); *Gressitt 880* (*A*), *962* (*A*); *F. C. How 71949* (*A*), *72402* (*A*), *73036* (*A*); *F. G. How & N. K. Chun 70098* (*A, Y*); *S. K. Lau 24* (*A, W, Y*), *143* (*A, W, Y*), *1343* (*A, Y*), *2982* (*A*), *3583* (*A*), *5285* (*A, W*), *6206* (*A, W*), *6366* (*A, W*), *25938* (*A, W*), *26117* (*A, W*); *C. I. Lei 11* (*A, Y*), *853* (*A, Y*); *H. Y. Liang 62370* (*W, Y*), *63785* (*W, Y*),

65278 (*W, Y*), *66048* (*W, Y*), *66474* (*W, Y*); *C. Wang 33432* (*Y*), *36143* (*W, Y*), *36796* (*W, Y*), *36906* (*W, Y*).

KWANGTUNG: *C. C. C. 322* (*A, Br, G, M, NA, W*), *430* (*A, Br, G, M*), *698* (*Br, F, G*), *757* (*A, Br, G, NA, W*), *1703* (*Br, G, M, NA, W*), *2031* (*A, NA*), *2077* (*A, NA*), *3102* (*M, NA*), *3143* (*A*), *6695* (*NA*), *6985* (*NA*), *11825* (*NA*), *12543* (*C, NA, W*), *12886* (*C, NA, W*), *13447* (*C, NA*), *14214* (*C, NA*), *16504* (*NA*), *18913* (*Y*), *19103* (*Y*); *W. Y. Chun 3084* (*Y*), *5591* (*A*), *6378* (*A, C*), *7344* (*A*); *Gressitt 1331* (*A*); *S. K. Lau 637* (*A, Y*), *2224* (*A*); *S. Y. Lau 20168* (*Y*); *Mell 264* (*A*), *343* (*A*); *Merrill 10217* (*NA*), *11084* (*NA*); *Nanking, Herb. Univ. 5904* (*C*), *6657* (*C*), *6712* (*C*), *6762* (*C*), *7059* (*C*); *Y. W. Taam 324* (*A*), *1027* (*A*); *W. T. Tsang 20052* (*Y*), *21012* (*A, NA, Y*), *21062* (*A, Y*), *21740* (*A, NA, Y*), *28781* (*A, W*); *Y. Tsiang 740* (*A*), *942* (*A*), *1166* (*A, C*), *1507* (*A, Y*), *2086* (*Y*), *2233* (*Y*); *C. L. Tso 20297* (*Y*), *20312* (*Y*), *20949* (*Y*); *K. K. Tsoong 4593* (*C*); *T. M. Tsui 58* (*Y*), *213* (*Y*), *218* (*W*); *Y. K. Wang 425* (*A*).

KWANGSI: *Ching 5523* (*A, W, Y*), *7274* (*W Y*), *7910* (*A, W*); *L. H. Chun 91229* (*A*); *S. P. Ko 55316* (*W*); *H. Y. Liang 66761* (*W*); *Steward & Cheo 542* (*A, Y*), *792* (*A, Y*), *1156* (*A, Y*); *W. H. Soo 67800* (*W*); *W. T. Tsang 21838* (*A, W*), *22274* (*A, W*), *22552* (*A, W*), *23035* (*A*), *23265* (*A*), *23857* (*A*), *24047* (*A*), *24636* (*A*); *C. Wang 39041* (*A, W*).

This common eastern species can be most readily recognized by its characteristically depressed-globose, and usually somewhat 5-angled fruits without longitudinal ribs, these frequently not 5-angled. The lower leaf surfaces and young stem tips are abundantly brownish-lepidote, and the lateral nerves numerous, inconspicuous, united in a definite marginal nerve, often obscure. The inflorescences never bear leaves or leaflike bracts.

12a. ARDISIA QUINQUEGONA var. HAINANENSIS Walker var. nov. Text fig. 12, d.

Frutex e forma typica inflorescentiis brevioribus, 1 ad 1.5 cm longis, fusco-puberulis, sepalisque 1.5 mm longis, perspicue triangulari-lanceolatis, tenuibus, glandulosis, ciliatis differens.

Differs from the typical form of the species in the shorter, fuscous-puberulent inflorescences (1 to 1.5 cm) and in the slightly longer sepals (1.5 mm), these distinctly triangular-lanceolate, thin, glandular-ciliate (not triangular-ovate and obscurely ciliate or entire).

Hainan and Kwangsi.

Type in the herbarium of the New York Botanical Garden, collected in the forest on the third peak of Hung Mo Mountain, south of Fan Ta, Hainan Island, July 24, 1929, *Canton Christian College 18098* (*Tsang Wai-tak & Fung Hom, field no. 564*); duplicate at the Arnold Arboretum. Additional specimens examined are: *C. C. C. 8595* (*A?, NA*) collected on Hainan Island, "on slopes of Five Finger Mountains, altitude 1400 m.," December 16, 1921, *9442* (*NA*) collected near a cave on the south slope of the Five Finger Mountains, May 5, 1922; *H. Fung 20144* (*W, Y*) collected on Lingnan University's Sixth Hainan Expedition at Chim Shan, Fan Maan Tsuen, Hainan, May 3 to 20, 1932; *W. T. Tsang 24701* (*A, W*) collected on Lingnan University's fourth expedition to Kwangsi at Shap Maan Tai Shan, Kwangsi, near the Kwangtung border, 1937.

12b. ARDISIA QUINQUEGONA var. OBLONGA Walker var. nov. Text fig. 12, e.

E forma typica inflorescentibus brevioribus, 1 ad 1.5 cm longis, sepalis densius fusco-puberulis vel lepidoti, sepalis 1.5 ad 3 mm longis, manifeste oblongo-lanceolatis, obtusis vel rotundis (non acutis) tenuibus, squamis fusco-lepidotis, fimbriato-ciliatis e costa plerumque manifesta differens.

Differs from the typical form of the species in the shorter, more fuscous-puberulent or lepidote inflorescences (1 to 1.5 cm) and in the longer sepals (1.5 to 3 mm), these distinctly oblong-lanceolate, obtuse or rounded, not sharply acute, thin, fimbriate-ciliate from the loose fuscous-lepidote scales, the midrib usually evident.

Type in the United States National Herbarium, *no. 1627190*, collected in woods at Yaichow, Hainan, July 24, 1933, by *F. C. How, no. 71089*, on Sun Yatsen University's Third Hainan Expedition; duplicates in the New York Botanical Garden and in the Arnold Arboretum. Additional specimens examined are: *C. C. C. 9473* (*C, NA, W*); *H. Y. Liang 64749* (*W, Y*); *S. K. Lau 26976* (*A*); *C. Wang 34215* (*W, Y*), *36020*[8] (*W, Y*); and *F. C. How, 71089* (*Y*), *72474* (*A, W*), all from Hainan.

A specimen collected by Gressitt, *no. 1756* (*A, W*), at Tai Yong, eastern Kwangtung, apparently near the Fukien border, resembles this variety in shape of sepals, but these are smaller, being only 1.5 mm long. The inflorescences are short, but the leaves are somewhat larger than those of the Hainan specimens of var. *oblonga*. Additional collections may make it advisable later to segregate another variety.

TABLE 1.—*Variations in A. quinquegona.*

Variety.	Sepals.			Inflorescence, size.
	Size.	Shape.	Margin.	
	mm.			*cm.*
A. quinquegona (typical)	1.0	triangular-ovate, acute.	glabrous or minutely ciliate.	2.0–6.0
A. quinquegona hainanensis	1.5	triangular-lanceolate, acute.	glandular-ciliate	1–1.5
A. quinquegona oblonga	1.5–3.0	oblong-ovate, obtuse or rounded.	fimbriate-ciliate	1–1.5

13. ARDISIA DEPRESSA C. B. Clarke.

Ardisia depressa C. B. CLARKE in Hook. f., Fl. Brit. Ind. 3 (1882) 522. Based on a collection by J. D. Hooker in Sikkim, India, altitude 1200 to 1800 m, and on other specimens from India. A photograph of the Hooker specimen at Kew has been examined.

Tinus depressa KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia depressa* C. B. Clarke.

A branching shrub 2 to 6 m high, glabrous throughout, the branchlets slender, grayish or brownish; leaves petiolate (about 1 cm), the blade thin-chartaceous, elliptic-lanceolate, acute to cuneate at base, slenderly or sometimes abruptly acuminate at apex, 8 to 12 cm long, 2 to 3.5 cm wide, entire, dull green above, slightly paler and lepidote beneath, glabrous, the midrib prominently raised beneath, the lateral nerves numerous, very fine, slightly raised, generally straight, uniting in a distinct marginal nerve, the veinlets more or less distinctly reticulate; inflorescences lateral, axillary or subterminal, cymose or compound-umbellate, 2 to 4 cm long, more or less ferruginous-lepidote, the peduncle 1 to 3 cm long, the pedicels slender, about 5 mm long or less; flowers white or pink, about 3 mm long; sepals shortly united at base, triangular-ovate, acute, obtuse or subrounded,[35] 1 mm long, ciliate, not punctate; petals ovate, acute, not punctate, glabrous; stamens nearly equaling petals, anthers ovate, acute to acuminate, black but not punctate on back; pistil equaling or longer than petals, the stigma often protruding; fruit 5 mm in diameter, dark reddish, not punctate, finely longitudinally ribbed.

Further India to Indo-China, Kwangsi, and Yunnan.

KWANGSI: *Ching 7054 (Su, V, W, Y); W. H. Soo 67782 (W), 67928 (W).*

[35] All the specimens observed have distinctly acute sepals, except *C. W. Wang 75357* and *78635* from Yunnan, which have obtuse or subrounded sepals.

YUNNAN: *Henry 11028* (*Y*), *11463* (*A, Y*); *H. T. Tsai 52468* (*A, W*), *52594* (*A, W*), *52622* (*A, W*), *55371* (*A*), *60384* (*A, W*), *60519* (*A, W*), *60570* (*A, W*), *61251* (*A*), *61304* (*A, W*), *61542* (*A, W*), *61609* (*A*), *62003* (*A, W*), *62171* (*A*), *62317* (*A, W*); *C. W. Wang 73593* (*A, W*), *74941* (*A*), *75357* (*A, W*), *76220* (*A, W*), *77463* (*A, W*), *77517* (*A, W*), *78635* (*A, W*), *79224* (*A, W*), *79416* (*A, W*), *79700* (*A, W*), *80697* (*A, W*), *80828* (*A, W*).

This species differs from *Ardisia quinquegona* in having shorter inflorescences, more prominently veined leaves, no punctate glands on the sepals, petals, and backs of stamens, and distinctly ribbed fruits. From *Ardisia quinquegona* var. *hainanensis* it differs in the ovate, not lanceolate sepals. For specimens possibly referable to this species see the discussion in Important Specimens not Determined, p. 154.

14. ARDISIA SIEBOLDII Miquel.

Ardisia Sieboldii MIQUEL, Ann. Mus. Bot. Lugd. Bat. 3 (1867) 190. Based on a collection by Siebold, probably in the Leiden herbarium. This specimen has not been seen.

Ardisia formosana ROLFE, Journ. Bot. Brit. & For. 20 (1882) 358. Based on *Oldham 301* from Formosa, and *Watters 42* and *C. Wright 188* from the Bonin Islands, probably in the Kew Herbarium. Duplicates of *Oldham 301* and of *C. Wright 188* have been examined.

Tinus Sieboldii KUNTZE, Rev. Gen. Pl. 2 (1891) 975. Based on *Ardisia Sieboldii* Miquel.

Bladhia Sieboldii NAKAI, Bot. Mag. Tokyo 35 (1921) (99). Based on *Ardisia Sieboldii* Miquel.

A branching shrub 1 to 6 m high or a tree up to 10 m, the trunk 20 cm in diameter, the branchlets rather thick, grayish, sparingly fuscous-lepidote when young, finely wrinkled; leaves petiolate (0.5 to 1 cm), the blade thick-chartaceous or coriaceous, usually obovate, sometimes elliptic-ovate or lanceolate, tapering, acute or cuneate at base, broadly acute or obtuse or rounded at apex, sometimes acuminate, 7 to 14 cm long, 2 to 5 cm wide, entire with usually recurved margin, dull green above, paler, brownish and sometimes minutely lepidote beneath, glabrous, the midrib prominent beneath, the lateral nerves numerous, fine, inconspicuous, forming an equally inconspicuous marginal nerve; inflorescences compound, subumbellate or cymose, axillary near ends of special flowering branches, 3 to 7 cm long, many-flowered, glabrous, the peduncle 2 to 6 cm long, the primary rays up to 2 cm long, the pedicels about 5 mm long; flowers white (*ex Ching 1951*), 3 to 4 mm long; sepals united up to ⅓ their length, ovate, acute, 1 to 1.5 mm long, entire or sparingly ciliate, punctate

with a few small black glands, glabrous; petals broadly ovate, not punctate or very obscurely so, glabrous; stamens about ¾ length of petals, the filaments distinct, sometimes nearly equaling the broadly ovate, apiculate, blackish but not black-punctate anthers; pistil nearly equaling petals; fruit about 7 mm in diameter, frequently somewhat fleshy, reddish or blackish, not punctate.

Southern Japan, Formosa, and the adjacent coast of China.

JAPAN, Kyushu: *Wilson 6049* (*A, M, W*), *6119* (*A, M, W*).

BONIN ISLANDS: *Wilson 8326* (*A*); *Wright 188* (*G, W*).

LIU KIU ISLANDS: *Faurie 3804* (*A*); *4005* (*A*), *4006* (*A*);[36] *R. Kanehira 3320* (*Y*); *K. Shiota Herb. 3220* (*A*); *Wilson 8039* (*A, W*).

FORMOSA: *Faurie 307* (*A*), *1033* (*A*); *Ford 50* (*G*); *Formosa, Herb. Gov't. W174* (*A*), *225* (*C*), *21243* (*A*); *Gressitt 239* (*Y*), *257* (*A, Y*), *334* (*Y*); *Henry 414* (*A*), *651* (*A*), *667* (*A*), *1881* (*A, W, Y*), *1881A* (*A, W*); *Oldham 301* (*G*); *Taihoku Imp. Univ., Herb. 11080* (*W*); *T. Tanaka 77* (*A, W*); *Wilson 10116* (*A, W*).

CHEKIANG: *Ching 1951* (*A, Su, W*).

FUKIEN: *H. H. Chung 921* (*Am, C*); *Fukien Christ. Univ. 42* (*C*), *2200* (*C*), *11358* (*C*).

This species is apparently most closely allied to *A. quinquegona*, from which it may generally be distinguished by its broader and not lepidote leaves, with the apex usually broadly acute; by its entire sepals, and usually by its thicker stems. However, it occasionally has acuminate leaves and sometimes ciliate sepals, suggesting possible hybridization, especially since the range of *A. quinquegona* includes that of *A. Sieboldii*.

15. ARDISIA TENERA Mez.

Ardisia tenera MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 104. Based on *Henry 12094* and *12123A* from Szemao, Yunnan, in the Berlin herbarium. The Berlin specimens have been examined by Mr. E. P. Killip at the request of the author and found to be identical with duplicates at the New York Botanical Garden and the Missouri Botanical Garden. *Henry 12123A* is referred to *A. arborescens* Wall. Mez's description conforms better with *Henry 12094*.

Ardisia Meziana LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 374. Based on *J. Cavalerie 3530* in the Léveillé herbarium collected at Lo-fou, Kweichow, *March 1909*. A fragment of the type at the Arnold Arboretum has been examined.

[36] Possibly to be referred to *Ardisia quinquegona* Blume.

A shrub 3 m high, the branchlets rather slender, grayish, fuscous-lepidote or puberulent when very young; leaves petiolate (up to 1 cm), the blade chartaceous, elliptic-lanceolate or rarely narrowly elliptic-ovate or obovate, cuneate or acute at base, acute or acuminate at apex, 10 to 14 cm long, 2 to 3.5 cm wide, entire, dull green above, paler and rather densely ferruginous-lepidote beneath, glabrous, the midrib prominently raised beneath, the lateral nerves numerous, fine, very obscure, especially above, sometimes slightly raised beneath, not generally curved-ascending, uniting into an obscure marginal nerve; inflorescences axillary or lateral, cymose or compound-umbellate, many-flowered, about 6 cm long, ferruginous-lepidote or minutely puberulent, the peduncle slender, about 4 cm long, the pedicels slender, 1 cm long; flowers pink, 4 mm long; sepals shortly united at base, triangular or elliptic-ovate, acute, 1.5 mm long, densely ciliate, obscurely or not at all punctate, glabrous or sometimes puberulent; petals ovate, acute or obtuse, obscurely punctate, puberulent near base within; stamens about $\frac{2}{3}$ length of petals, the anthers ovate, acute, acuminate or apiculate, not punctate on back; pistil equaling or longer than petals; fruit about 5 mm in diameter, blackish, not punctate, very obscurely longitudinally ribbed.

Southern China.

KWANGSI: *H. B. Morse 587* (*Y*).

KWEICHOW: *J. Cavalerie 3530* (*A*).

YUNNAN: *Henry 9653A* (*A*), *12094* (*A, M, W*).

This species is distinguished with difficulty from *A. depressa* and *A. quinquegona*, differing primarily in its longer, puberulent inflorescences, puberulent stems, and larger flowers and sepals.

16. ARDISIA FORDII Hemsl.

Ardisia Fordii HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 64. Based on *Ford 110* collected in 1888 in Kwangtung, in the Kew herbarium. A photograph and fragment have been examined.

Embelia Fordii MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 236. Based on *Ardisia fordii* Hemsl.

An erect undershrub 30 to 60 cm high, the stems fuscous-lepidote when young; leaves petiolate (3 mm), the blade chartaceous, elliptic-lanceolate, tapering-acute at both ends or apex subacuminate with rounded tip, 2.5 to 5 cm long, about 1 cm wide, entire, slightly paler and scattered fuscous-lepidote beneath, glabrous, the midrib prominent beneath, the lateral nerves very numerous, fine, uniting in a marginal nerve; inflorescences umbellate, ter-

minal on special lateral branches up to 6 cm long, these bearing a few scarcely reduced leaves above middle), fuscous-lepidote, the pedicels very slender, about 7 mm long, the bracts minute, lanceolate; flowers "yellow" (*ex W. T. Tsang 21236*), about 4 mm long; sepals ovate, acute or subrounded, about 1.5 mm long, ciliate punctate on back, more or less fuscous-lepidote; petals ovate, acute, punctate; stamens shorter than petals, the anthers lanceolate, apiculate, black but not punctate on back: pistil about equaling petals; fruit about 5 mm in diameter, dark reddish, fuscous-lepidote, reddish- or black-punctate, smooth, not ribbed.

Southern China.

KWANGTUNG: *C. C. C. 14613* (*C, NA*); *Ford 110* (*A, Y*); *H. T. Ho 60005* (*Y*); *S. Y. Lau 20159* (*Y*); *W. T. Tsang 21236* (*A, Y*).

KWANGSI: *H. Y. Liang 69701* (*A*); *W. T. Tsang 23040* (*W*); *Y. C. Wang 5216* (*Su*).

This species is somewhat similar to *Ardisia quinquegona*, but is much smaller, less branched, and generally has inflorescences on special, leaf-bearing, lateral branches.

Section CRISPARDISIA Mez

Woody shrubs, usually with a creeping rhizome, the erect stems usually unbranched except for special lateral flowering branches; leaves entire, crenulate or undulate with distinctive albuminous marginal glands in teeth or sinuses or merely at ends of lateral nerves or veinlets; inflorescences terminal on ends of special branches; sepals sometimes dextrorsely imbricate, acute, obtuse, or rounded.

17. ARDISIA VIRENS Kurz.

Ardisia virens KURZ, For. Fl. Burma 2 (1877) 575. Based on a collection from Ava Hills, Burma, probably by J. Anderson.[30, p. 226]

Ardisia radians HEMSL. & MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 146. Based on *Henry 555* from Formosa and *9226A* and *11624C* from Yunnan, all in the Berlin and Kew herbaria. Duplicates have been examined. This plant was erroneusly cited as *A. radicans* by B. Hayata.[21, p. 91]

Ardisia Oldhami MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 148. Based on *Oldham 306* from Formosa in the Vienna herbarium. A duplicate has been examined.

Tinus virens KUNTZE, Rev. Gen. Pl. 2 (1891) 975. Based on *Ardisia virens* Kurz.

A shrub 1 to 3 m high, glabrous throughout, the main stem rather thick, brownish; leaves with channeled petiole (1 to 1.5 cm), the blade chartaceous, elliptic- or oblong-lanceolate or ovate

to obovate, acute to cuneate at base, acuminate or sometimes abruptly acuminate at apex, 9 to 17 cm long, 3 to 5 (rarely 7) cm wide, crisped or sometimes crenulate on margin with rather numerous marginal glands, light green (especially in the western specimens), slightly paler beneath, sometimes very minutely lepidote, generally abundantly black-punctate at least along margin beneath, glabrous, the midrib prominently raised beneath, the lateral nerves fine, 15 to 20 pairs, more raised beneath than above, uniting in a marginal nerve, the veinlets usually reticulate, often raised; inflorescences compound-corymbose or -umbellate, rather many-flowered, glabrous, terminal on special lateral flowering branches, these about 30 cm long, occasionally only 15 cm long, smooth, greenish or grayish, the leaves scattered through more than upper third, the primary rays often 7 cm long, the pedicels 1 to 2 cm long, sometimes stout, clavate, the bracts deciduous, generally broadly elliptic, 3 to 4 mm long, strongly black-punctate; flowers ovate in bud, whitish, 6 to 8 mm long; sepals shortly united at base, oblong-ovate to orbicular, obtuse or rounded, rather thin, entire, 2.5 to 4 mm long, usually densely black-punctate, sometimes 6-nerved; petals ovate or broadly ovate, acute or obtuse, generally with many small black punctations, glabrous or minutely puberulent near base within; stamens nearly equaling petals, the anthers lanceolate or ovate, acute, prominently black-punctate on back; pistil equaling or shorter than petals, the ovary showing punctations early; fruit 7 to 8 mm in diameter, pale tan (especially in western and southern specimens) usually becoming reddish or blackish, abundantly black-punctate.

Formosa, Hainan, and Yunnan south to Bengal, Assam, Burma, and Sumatra.

FORMOSA: *Bartlett 6258* (*W*); *Faurie 1486* (*A, Y*); *Gressitt 73* (*Y*), *254* (*A, Y*), *332* (*Y*); *Henry 85* (*A, Y*), *555* (*M, Y*), *909* (*A, W*); *Oldham 306* (*G*); *Wilson 10138* (*A, W*).

HAINAN: *H. Fung 20203* (*A, W, Y*); *McClure 20106* (*W, Y*).

KWANGSI: *S. P. Ko 55352* (*W*).

YUNNAN: *Forrest 7960* (*A*), *8716* (*A*), *9429* (*E, Y*), *9667* (*E*), *18445* (*A*); *Henry 9226* (*A, Y*), *9226A* (*M, W*), *9226B* (*Y*), *9226C* (*W*), *11400* (*A*), *11624* (*A, Y*), *11624A* (*A, M*), *11624B* (*A, Y*), *11624C* (*A, M*), *11624D* (*A, Y*); *H. T. Tsai 51665* (*A, W*), *52410* (*A, W*), *55060* (*A, W*), *56330* (*A*), *56807* (*A, W*), *56925* (*A*), *60010* (*A*), *60053* (*A*), *60103* (*A*), *60328* (*A*), *60346* (*A*), *60429* (*A, W*), *60584* (*A*), *61406* (*A, W*), *61686* (*A, W*), *62022* (*A*), *62097* (*A*), *62235* (*A*); *C. W. Wang 72281*

(*A*), *72925* (*A, W*), *73661* (*A, W*), *74174* (*A, W*), *75065* (*A, W*), *78213* (*A, W*), *79143* (*A, W*), *79355* (*A, W*), *80308* (*A, W*).

This species may be recognized by the black glands, which are especially abundant and prominent on the broadly ovate or orbicular, usually imbricate sepals, on the petals and backs of the anthers, and on the fruits. The leaves usually are also punctate, sometimes abundantly so.

Although the type of this species has not been seen, duplicates of the types of the species which are here considered as synonyms have been examined, as well as several other specimens cited by Mez. Furthermore, duplicates and fragments of specimens examined by Pitard, representing *A. virens* Kurz and several of Pitard's closely related species, have been critically examined. It is obvious from a study of these many specimens that there is considerable variation in the shape of leaves, sepals, and other parts, and in the punctation of these parts, frequently even within the same specimen. These variations cannot be coordinated with geographic distribution, except perhaps with specimens from Formosa, in which the leaves seem almost always to be lanceolate and long-acute or acuminate, rather than oblanceolate or obovate and abruptly acute or acuminate. A comparison of the descriptions and keys by Kurz, Mez, and Pitard shows considerable variation, most notably between various authors' concepts of the same species. Hence it seems best to retain this variable concept of the species for the present.

18. ARDISIA CORNUDENTATA Mez. Text fig. 13.

Ardisia cornudentata Mez in Engl., Pflanzenreich 9 (IV. 236) (1902) 144. Based on *Henry 54*, *54A*, and *1074A* and *Warburg 10746* in the Berlin and Kew herbaria. A duplicate of *Henry 54* has been examined.

Bladhia cornudentata Nakai, Bot. Mag. Tokyo 35 (1921) 98. Based on *Ardisia cornudentata* Mez.

Ardisia Morrisonensis Hayata, Journ. Coll. Sci. Univ. Tokyo 30[1] (1911) 180. Based on *Hayata* (?) *671*, *C. Owatari*, January 1897, *K. Miyake*, December 1899, and *T. Kawakami & U. Mori no. 1912* (November, 1906). None of these specimens have been examined. Hayata distinguished his proposed species from *A. cornudenta* Mez, which he apparently did not know, principally by its "ferrugineo-tomentose" leaves. Since elsewhere he has confused tomentose and puberulent, and since in *A. cornudentata* the leaves vary from lepidote to puberulent, there is little doubt that *A. Morrisonensis* is only a slight variant of this species.

Bladhia Morrisonensis Nakai, Bot. Mag. Tokyo 35 (1921) (99). Based on *Ardisia Morrisonensis* Hayata.

A shrub 1 m high or less,[37] the stems glabrous, rather thick, smooth and reddish or rough and grayish; leaves with channeled or narrowly winged petiole (5 mm), the blade chartaceous, elliptic-lanceolate or oblanceolate or sometimes obovate, cuneate

Fig. 18. *Ardisia cornudentata* Mez. *a*, branchlet with inflorescences, × ½; *b*, flower bud, × 5; *c*, stamen, × 5. Drawn from a type collection, *Henry 10714A (A)*.

at base, acute or acuminate at apex, 7 to 14 cm long, 1.5 to 3.5 (rarely 6) cm wide, distinctly serrate-dentate with marginal

[37] The specimen collected by U. Faurie, *no. 342*, has a thick, apparently horizontal rhizome with two thick, erect stems about 12 cm high. Whether or not this represents the typical habit of the plant cannot now be ascertained.

glands in the teeth, dull green above, distinctly brownish and sometimes minutely lepidote beneath, not at all punctate, glabrous on both sides or sometimes puberulent beneath especially near base of midrib, the midrib prominently raised beneath, the lateral nerves numerous, fine, nearly straight, some ending in marginal glandular teeth; inflorescences simple or compound, umbellate, puberulent, terminal on special lateral branches, these 8 to 15 (rarely 24) cm long, curved at apex, bearing a few leaves or leaflike bracts mostly above middle; flowers 4 to 5 mm long, narrowly conical in bud, the color unknown; sepals distinctly dextrorsely imbricate, nearly orbicular, about 1.5 mm long, ciliate, thin-margined, not punctate; petals ovate, obtuse or acute, punctate, glabrous on both sides; stamens nearly equaling petals, the anthers narrowly lanceolate, acute, punctate on back; pistil about equaling petals; fruit about 5 mm in diameter, black, not at all or obscurely punctate.

FORMOSA: *Faurie 342 (Y); Formosa, Herb. Gov't. 21151 (A); Gressitt 491 (A, Y), 508 (Y); Henry 54 (A), 975 (A, W), 1074 (A, Y), 1074A (A, Y); K. Shiota Herb. 3218 (A); Tanaka 461 (A, W).*

This species is easily distinguished by its imbricate sepals and serrate-dentate leaves. Several doubtful additional synonyms are discussed under Uncertain Species, p. 152.

19. ARDISIA CRASSINERVOSA Walker sp. nov. Text fig. 14.

Frutex 1 m altus, perglaber, caulibus erectis fuscis rugosis praeter ramulos floriferos non ramosis; folia chartacea vel coriacea, oblongo-lanceolata, utroque acutis, 4 ad 10 cm longa, 1.5 ad 4 cm lata, margine plana vel crenata, bene glandulosa, subtus atropunctatula vel non punctata, nervibus lateralibus 12 ad 20 jugis, crassis, bene elevatis, in nervulum manifestum marginalem confluentibus, venulis non distincte reticulatis; inflorescentiae multiflorae, simplices, subumbellatae in apicibus uncis ramulorum specialium, floriferorum 9 cm longorum, foliis vel bracteis foliaceis paucis supra medium sparsis donatorum; flores 4 ad 5 mm longi; sepala basi perspicue dextrorse imbricata, late ovata vel suborbiculata, rotundata vel late obtusa, 2.5 ad 3 mm longa, atropunctata vel obscure punctata, margine tenuiter scariosa; petala dorso perspicue atropunctata, intus minute puberula; stamina petalis fere aequalia, antheris lanceolatis, dorso atropunctatis; pistillum petalis aequale; fructus 5 mm diametro, manifeste atropunctatus.

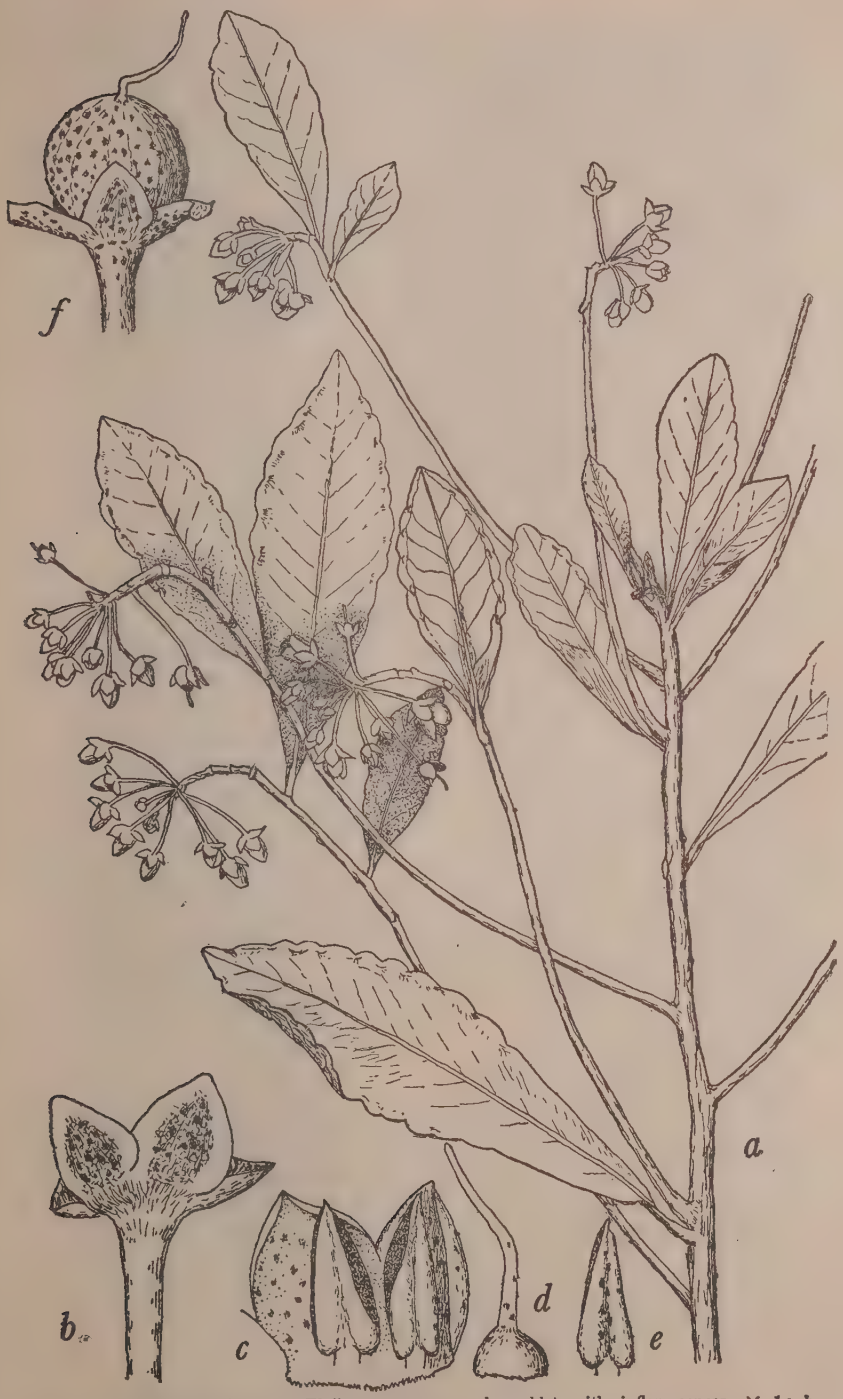

FIG. 14. *Ardisia crassinervosa* Walker sp. nov. *a*, branchlet with inflorescences, × 1; *b*, sepals, × 5; *c*, portion of corolla with stamens, × 5; *d*, pistil, × 5; *e*, stamen, back view, × 5; *f*, fruit with sepals, × 5. Parts *a* to *e* drawn from *Hongkong Bot. Gard., Herb. 2246* (*A*); part *f* from the type. *C. C. C. 17423* (*W*).

A shrub 1 m high, glabrous throughout, the erect stems brownish, wrinkled, unbranched except for the special flowering branches; leaves short-petiolate (3 mm), the blade chartaceous or coriaceous, oblong-lanceolate, acute at both ends, 4 to 10 cm long, 1.5 to 4 cm wide, entire or scalloped with prominent marginal glands, about equally brownish green on both sides, with or without black punctations beneath, midrib prominent beneath, the lateral nerves 12 to 20 pairs, thick, raised, uniting in an equally prominent marginal nerve, the veinlets not distinctly reticulate; inflorescences many-flowered, simple, subumbellate on curved ends of special flowering branches, these about 9 cm long, bearing a few leaves or leaflike bracts scattered above middle, the pedicels about 1 cm long, somewhat flattened; flowers pink to purplish, 4 to 5 mm long; sepals distinctly dextrorsely imbricate at base, broadly ovate or suborbicular, rounded or broadly obtuse, 2.5 to 3 mm long, entire with scarious margin; black-punctate or obscurely so; petals broadly ovate, obtuse or rounded, strongly black-punctate on back, minutely puberulent within; stamens nearly equaling petals, the anthers lanceolate, slenderly acute, black-punctate on back; pistil equaling petals; fruit 5 mm in diameter, light brownish, prominently black-punctate.

Type in the herbarium of Univ. of Calif. *no. 356771*, collected in Hainan, June 13, 1928, *Lingnan University* (*Canton Christian College*) *no. 17423* (*Tsang Wai-tak field no. 674*); duplicates in the United States National Herbarium and at the Arnold Arboretum. Other specimens examined, also from Hainan: *C. C. C. 8960* (*NA*); *Gressitt 931* (*A*); *Hongkong Bot. Gard., Herb. 2246* (*A*);[38] *F. C. How* and *N. K. Chun 70215* (*A, W, Y*); *S. K. Lau 2961* (*A*), *6278* (*A, W*), *26061* (*A, W*); *C. I. Lei 814* (*W, Y*); *H. Y. Liang 66118* (*W, Y*), *66024* (*W, Y*).

This is a very distinct species, readily recognized by its flowers and fruits with suborbicular imbricate sepals and by its leaves with prominently raised lateral veins uniting in a conspicuous marginal nerve.

20. ARDISIA NERVOSA Walker sp. nov.

Frutex 1 ad 2 m altus, caulibus erectis praeter ramulos floriferos non ramosis; folia chartacea, elliptico-lanceolata, oblanceolata vel rarissime obovata, basi cuneata vel acuta, apice acuta vel acuminata, 10 ad 16 cm longa, 3 ad cm lata, margine undulata, bene glandulosa, obscure vel non punctata, nervibus lat-

[38] The collector and precise locality for this specimen, collected on March 5, 1905, are not known.

eralibus circa 20 jugis, utroque elevatis in nervum marginalem manifestum confluentibus, venulis non distincte reticulatis; inflorescentiae simplices vel duplicato-subumbellatae in apicibus ramulorum specialium floriferorum, 9 ad 14 cm longorum, prope apicem foliis paucis donatorum; flores albi, 5 mm longi; sepala juniora basi perspicue dextrorse imbricata, oblongo-ovata, apice rotundata vel obtusa, 3 ad 4 mm longa, extra punctata, intus bene venosa, margine subscariosa; petala ovata, obtusa, punctata; antherae lanceolatae, acutae, dorso non vel sparse punctatae; pistillum petalis aequale; fructus 5 mm diametro, dense atro-punctatus.

A shrub up to 2 m high, the erect stems light brown, glabrous, probably unbranched except for the special flowering branches; leaves with channeled petiole (0.5 to 1.5 cm), the blade chartaceous elliptic-lanceolate, oblanceolate or rarely obovate, cuneate or acute at base, acute or acuminate at apex, 10 to 16 cm long, 3 to 5 cm wide, slightly undulate on margin with marginal glands, equally light green on both sides, obscurely or not at all punctate, glabrous, the midrib prominently raised beneath, the lateral nerves about 20 pairs, raised on both surfaces, curved-ascending, uniting in a definite marginal nerve, the veinlets not distinctly reticulate; inflorescences simple or compound, subumbellate, terminal on special lateral flowering branches, these 9 to 14 cm long, generally glabrous, with a few leaves near apex, the pedicels 3 to 5 mm long, minutely fuscous-puberulent at least when young, the flowers white, 5 mm long; sepals generally dextrorsely overlapping when young, oblong-ovate, rounded or obtuse, 3 to 4 mm long, subscarious on margin, punctate on back, strongly veined within, glabrous; petals ovate, obtuse, punctate, papillose within near base; stamens nearly equaling petals, the anthers lanceolate, acute, not at all or sparingly punctate on back; pistil about equaling petals; fruit 5 mm in diameter, red, densely black-punctate.

Type in the United States National Herbarium, *no. 1627236*, collected by *H. Y. Liang, no. 63247*, along stream in light woods, Yaichow, Hainan, October 15, 1933; duplicate at the New York Botanical Garden. Additional specimens examined, all from Yaichow, Hainan: *N. K. Chun & C. L. Tso 44742* (*A, Y*); *H. Y. Liang 62063* (*W, Y*); *C. Wang 33170* (*Y*).

This species most nearly resembles *Ardisia crassinervosa* Walker, but differs in its generally larger leaves and sepals, the latter oblong-ovate rather than orbicular, and strongly nerved within. The anthers are less prominently punctate on the back.

21. ARDISIA VILLOSA Roxb.

Ardisia villosa ROXB., Hort. Beng. (1814) 85 *nomen nudum;* Fl. Ind. ed. Carey 2 (1824) 274. Described as "a native of the forests of Pulo-pinang, [Malay Peninsula] where Mr. R. found it in blossom in July."

Ardisia vestita WALL. in Roxb., Fl. Ind. ed. Carey 2 (1824) 274. Probably base on *Wallich 2280* [Wall. List (1830) *no. 2280* and DC. Prodr. 8 (1844) 136.]

Ardisia dumetosa TUTCH., Rep. Bot. For. Dept. (Hongkong) 1914 (1915) 33. Based on *Hongkong Bot. Gard., Herb. no. 10948* in the Hongkong herbarium. A duplicate has been examined.

Ardisia trichocarpa MERR., Lingnan Sci. Journ. 7 (1931) 319. Based on *Y. Tsiang 998* from Yun Luk, Kochow district, Kwangtung, in the herbarium of the University of California. The type has been examined.

An erect undershrub 0.5 to 2.5 m high, with creeping rhizome, fuscous- or ferruginous-villose or hirsute almost throughout, the hairs crisped, the stem rather thick, stiff and straight, brownish, becoming glabrous, unbranched except for the special flowering branches; leaves petiolate (about 1 cm), the blade chartaceous, elliptic-lanceolate or ovate, rarely oblanceolate, acute or cuneate at base, acute or acuminate at apex, 7 to 15 cm long, 2.5 to 4 cm wide, entire or somewhat finely undulate or serrulate or indented at marginal glands, these frequently very obscure or apparently wanting, generally densely punctate especially beneath, glabrous above except on impressed midrib, densely hirsute or villose beneath especially on prominent midrib, the lateral nerves about 15 pairs, raised on both sides, uniting in a more or less irregular and interrupted marginal nerve, the veinlets reticulate, often not evident; inflorescences simple or compound-umbellate, villose, terminal on special lateral flowering branches, these 2 to 20 cm long, usually with a few reduced leaves near apex, the pedicels 0.5 to 1 cm long; flowers lavender, pink, or white, 5 to 7 mm long; sepals oblong-lanceolate or ligulate, obtuse or acute, equaling flowers, conspicuously black-punctate, densely villose outside, pubescent within; petals ovate to lanceolate, acute to rounded, more or less punctate; stamens slightly shorter that petals, the anthers lanceolate, acute, more or less prominently punctate on back; pistil about equaling petals, the ovary glabrous or puberulent near apex; fruit 5 to 7 mm in diameter, dark red or black, hirsute or villose, punctate, the sepals conspicuous.

Southeastern Asia, from Southern China to Burma and the East Indies.

HONGKONG: *Hongkong Bot. Gard., Herb. 11171* (*Y*).[39]

NEW TERRITORY: *Hongkong Bot. Gard., Herb. 10948* (*Y*).

HAINAN: *Henry 8103* (*Y*), *8388* (*Y*); *F. C. How 73612* (*A, W*), *73702* (*A, W*); *S. K. Lau 25946* (*A, W*), *27296* (*A, W*); *H. Y. Liang 62684* (*Y*); *Eyrl Smith 6* (*Y*); *C. Wang 36708* (*Y*).

KWANGTUNG: *C. C. C. 19680* (*Y*); *Y. Tsiang 998* (*C*), *2089* (*Y*).

KWANGSI: *Ching 8006* (*Y*), *8307* (*W, Y*); *Steward & Cheo 547* (*A*), *590* (*A, Y*); *W. T. Tsang 22268* (*A, W*), *22500* (*A, W*), *24169* (*A*), *24732* (*A*).

YUNNAN: *Henry 12175* (*W, Y*), *12175A* (*A*), *12175B* (*A, Y*); *C. W. Wang 73708* (*A*), *74138* (*A, W*), *75203* (*A, W*), *76222* (*A, W*), *77839* (*A, W*), *80334* (*A, W*), *80600* (*A, W*), *81211* (*Fa*).

This species is readily recognized in this section by the prominent crisped hairs on nearly all parts of the plant except the upper leaf surfaces (exclusive of the midrib) and by the petals, and by the long-lanceolate or ligulate sepals, equaling or exceeding the flowers and fruits. It seems to be somewhat variable in China as well as throughout its range in southern Asia. Several varieties may be distinguished in Hainan.

A. vestita Wall. was proposed by Wallich in his observations on Roxburgh's species as doubtfully distinct. Mez recognized *A. vestita* Wall. with *A. villosa* Roxb. as a synonym, and this arrangement was followed by Pitard. However, since the two are considered identical, it seems unreasonable to reject Roxburgh's name in favor of Wallich's doubtful new species.

21a. ARDISIA VILLOSA var. AMBOVESTITA Walker var. nov.

E forma typica caulibus brevioribus foliis utrinque villosis, inflorescentiis in ramulis plerumque brevioribus saepe foliis destitutis differens.

Stems generally shorter than in the typical form of the species, the leaves villose on both surfaces, the inflorescences generally shorter, the special flowering branches often without leaves.

Type in the herbarium of the Arnold Arboretum, collected by *C. Wang, no. 35238*, in a dense forest on Hainan Island, December 8, 1933, for Sun Yatsen University; duplicates at the United States National Herbarium and the New York Botanical Garden. Additional specimens examined, also from Hainan: *C. C.*

[39] This specimen is doubtfully from Hongkong territory.

FIG. 15. *Ardisia villosa* var. *latifolia* Walker var. nov. Whole plant with inflorescences, × ½. Drawn from the type, *H. Y. Liang 70012* (*W*).

C. 8671 (*A, M, NA, Y*), *9336* (*NA, Y*); *N. K. Chun & C. L. Tso 44210* (*W, Y*).

Specimens of *Ardisia villosa* Roxb. with leaves villose on both surfaces, have been seen among collections from the Malay Peninsula as well as those cited here.

21b. ARDISIA VILLOSA var. LATIFOLIA Walker var. nov. Text fig. 15.

E forma typica caulibus erectis gracilioribus circa 22 cm longis foliis late elliptico-ovatis, 5 ad 9 cm longis, 2.5 ad 4.5 cm latis, utroque acutis, inflorescentiis plerumque brevioribus 0.8 ad 3 cm longis, sepalis brevioribus, 4 ad 5 cm longis differens.

Differs from the typical form of the species in its shorter and slenderer upright stems (about 22 cm), the leaves broadly elliptic-ovate, 5 to 9 cm long, 2.5 to 4.5 cm wide, acute at both ends, in the generally shorter inflorescences (0.8 to 3 cm long), and shorter sepals (4 to 5 mm long).

Type in the United States National Herbarium, *no. 1751585*, collected by *H. Y. Liang, no. 70012*, at Shi Wan Da Shan, Kwangsi, August 6, 1937, for Sun Yatsen University; distributed by the Arnod Arboretum. An additional specimen is *H. Y. Liang 69406*, from Sup-man-ta Shan, Kwangsi.

21c. ARDISIA VILLOSA var. OBLANCEOLATA Walker var. nov. Text. fig. 16.

E forma typica caulibus gracilioribus minoribus, foliis angustioribus, 5 ad 10 cm longis, 1.2 ad 2.5 cm latis, floribus fructubusque minoribus, ramulis lateralibus specialibus floriferis, 1 ad 5 cm longis, ramulis brevioribus, foliis carentibus differens.

Differs from the typical form of the species in the somewhat slenderer stems, the smaller and narrower, oblanceolate leaves, 5 to 10 cm long, 1.2 to 2.5 cm wide, in the smaller flowers and fruits, and in the special lateral branches variable in length, 1 to 5 cm long, without leaves near apex in shortened forms.

Type in the United States National Herbarium, *no. 1717752*, collected by *N. K. Chun* and *C. L. Tso, no. 43786*, between Dung Ka and Wen Fa Shi, Hainan, September 2, 1932, for Sun Yatsen University; duplicates at the New York Botanical Garden and the Arnold Arboretum. Additional specimens examined, also from Hainan: *N. K. Chun & C. L. Tso 43674* (*A, W, Y*); *F. C. How 72431* (*A, W*); *S. K. Lau 25848* (*A, W*), *26644* (*A, W*); *H. Y. Liang 62032* (*A, W, Y*).

22. ARDISIA VILLOSOIDES Walker sp. nov. Text fig. 17.

Frutex humilis suffrutescens, fere undique villosus rhizomate lignoso, caulibus erectibus 15 ad 30 cm longis, villosis vel supra tomentosis; folia petiolis villosis, 1.5 ad 3 cm longis insidentia;

FIG. 16. *Ardisia villosa* var. *oblanceolata* Walker var. nov. Whole plant with inflorescences, × ½. Drawn from the type, *N. K. Chun & C. L. Tso 43786* (*W*).

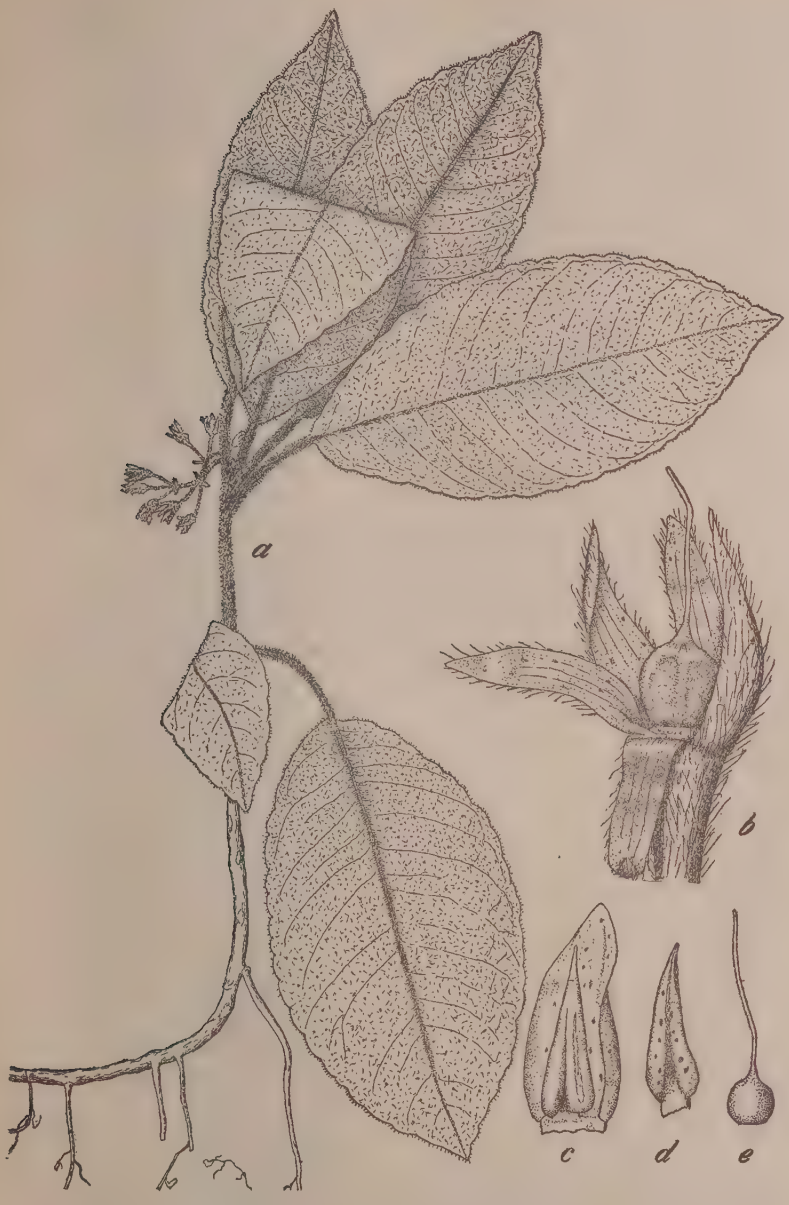

FIG. 17. *Ardisia villosoides* Walker sp. nov. *a*, whole plant × ½; *b*, sepals and very immature fruit, × 5; *c*, petal and stamen, × 5; *d*, stamen, back view, × 5; *e*, pistil, × 5. Drawn from the type, *F. C. How 72747* (*W*).

lamina chartacea, 12 ad 20 cm longa, 5 ad 9 cm lata, late ellipticoovata, basi obtusa ad rotundata, apice late acuta vel acuminata, margine undulata glanduloso-crenata, utrinque villosa, nervibus lateralibus circa 15 jugis; inflorescentiae duplicato-subumbellatae vel cymosae, villosae, in ramulis axillaribus specialibus circa 1 cm longis, foliis nullis, pedicellis 6 ad 10 mm longis; flores 6 mm longi; sepala oblongo-lanceolata vel ligulata, acuta, 6 mm longa, punctata, villosa; petala 6 mm longa, ovata, glabra, punctata; stamina petalis breviores, antheris anguste lanceolatis apiculatis dorso minute glandulo-punctatis; pistillum petalis longius; fructus 6 mm diametro, glaber.

A low suffrutescent undershrub, villose almost throughout, the rhizome woody, creeping, the erect stems 15 to 30 cm long, villose to tomentose above; leaves with villose petiole (1.5 to 3.5 cm), the blade chartaceous, broadly elliptic-ovate, obtuse to rounded at base, broadly acute or acuminate at apex, 12 to 20 cm long, 5 to 9 cm wide, scalloped-crenate, with marginal glands, black-punctate beneath, villose on both surfaces, especially on prominent midrib beneath, the lateral nerves about 15 pairs, ending in marginal glands and more or less united by a marginal nerve, the veinlets reticulate; inflorescences compound-subumbellate or cymose on ends of short, axillary, villose branches about 1 cm long, the primary axes about 0.5 cm long, the pedicels 0.6 to 1 cm long, the bracts 3 mm long, all villose; flowers pink, 6 mm long; sepals oblong-lanceolate to ligulate, acute, 6 mm long, punctate, villose; petals ovate, punctate, glabrous; stamens 5 mm long, the anthers narrowly triangular-lanceolate, tapering to an acute or apiculate apex, punctate on back, the dots small; pistil equaling or longer than petals, ovary glabrous; fruit 6 mm in diameter, "bright red" [*ex* How] glabrous, not punctate.

Type in the United States National Herbarium, *no. 1666460,* collected by *F. C. How, no. 72747,* at 350 m altitude in a bamboo grove at Po-ting, Hainan, June, 1935, for Sun Yatsen University; duplicate at the Arnold Arboretum. An additional specimen examined, also from Hainan, is *N. K. Chun & C. L. Tso no. 44400* (*Su*).

This species resembles *Ardisia villosa* Roxb. in its villose pubescence and oblong-lanceolate sepals equaling the petals. It differs, however, in its much broader leaves, villose on both surfaces, and in its shorter inflorescences and stems.

23. ARDISIA MAMILLATA Hance.

Ardisia mamillata HANCE, Journ. Bot. Brit. & For. 22 (1884) 290. Based on a specimen at Kew originally in cultivation in Hongkong in 1883, brought from Loh Fau Mountain, Kwangtung, the previous year by C. Ford. A photograph has been examined.

Tinus mamillata KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia mamillata* Hance.

A suffrutescent undershrub with creeping woody rhizome, the short, erect stems scarcely 10 cm long, abundantly pilose when young, with crisped-ferruginous hairs, glabrescent; leaves alternate or clustered at ends of stems, subsessile or petiolate (up to 1.5 cm), the blade chartaceous, oblong-lanceolate to obovate, tapering to an obtuse or narrowly rounded base, acute or obtuse at apex, 7 to 14 cm long, 3 to 5 cm wide, remotely and obscurely crenate with marginal glands hidden by hairs, black-punctate on both surfaces, bright green and densely papillose-pilose above, the crisped hairs rising from tuberculate processes, the midrib more or less shaggy, prominent beneath, the lateral nerves not very prominent, 8 to 10 pairs, not uniting in a marginal nerve; inflorescences simple, subumbellate, 10- to 15-flowered, densely pilose on curved ends of special axillary flowering branches, these 5 to 8 cm long, pilose, usually with 1 to 4 reduced leaves beneath inflorescence, the pedicels 4 to 8 mm long; flowers whitish, 4 to 6 mm long; sepals very shortly united at base, narrowly oblong-lanceolate, acute, nearly equaling petals, punctate, pilose; petals ovate, acute or obtuse. black-punctate; stamens nearly equaling petals, the anthers lanceolate, sagittate at base, very acute at apex, generally punctate on back; pistil about equaling petals; fruit about 6 mm in diameter, somewhat fleshy, reddish, more or less punctate, glabrous or pilose.

FUKIEN: *Gressitt 1685 (A); Hongkong Bot. Gard., Herb. 2897 (A).*

HONGKONG: *Ford,* without number (photograph of type, *A*).

HAINAN: *C. C. C. 8690 (A, NA, Y), 9333 (C, NA, Y); N. K. Chun & C. L. Tso 44174 (A, Y); C. Wang 35230 (Y).*

KWANGTUNG: *C. C. C. 2341 (NA), 7221 (NA), 12601 (W), 12889 (C, NA, W), 13370 (C, NA), 14345 (NA, W), 14553 (C, NA), 18705 (Y); W. Y. Chun 5593 (A), 5939 (C); Ford 59 (Y); S. K. Lau 928 (A, Y), 970 (A, Y), 2285 (A); Y. W. Taam 273 (A), 318 (A), 394 (A), 1012 (A), 1020 (A); W. T. Tsang 20215 (Y), 21047 (A, Y), 28524 (A, W); C. L. Tso 20842 (Y); Y. K. Wang 1814 (C).*

KWANGSI: *Ching 8185* (*Y*); *L. H. Chun 91331* (*A*); *S. P. Ko 55478* (*A*); *Steward & Cheo 784* (*A, Y*); *W. T. Tsang 23017* (*A*), *23256* (*A*), *23936* (*A*); *C. Wang 40635* (*A, W*).

KWEICHOW: *Y. Tsiang 6727* (*W*).

SZECHWAN: *Faber 701* (*791?*) (*Y*).

This very low species may be easily recognized by the tubercles or papillæ on the upper leaf surfaces from which arise the long jointed hairs. It is most closely related to *A. primulifolia,* in which the hairs arise directly from the leaf surfaces. The marginal glands are readily overlooked beneath the abundant hairs.

24. ARDISIA PRIMULIFOLIA Gardn. & Champ.

Ardisia primulifolia GARDN. & CHAMP., Journ. Bot. Kew Misc. 1 (1849) 324. Based on a collection by Champion from Mount Victoria, Hongkong. The type has not been examined.

Tinus primulifolia KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia primulifolia* Gardn. & Champ.

A subherbaceous and subacaulescent plant, ferruginous-pilose throughout; leaves forming a rosette about the single or few inflorescences, sessile or petiolate (up to 5 mm), the blade membranous, obovate or broadly elliptic, tapering to a broadly acute or obtuse base, rounded or broadly obtuse at apex, 6 to 15 cm long, 2.5 to 8 cm wide, obscurely crenate with marginal glands in sinuses, minutely and rather obscurely punctate, generally rather abundantly provided on both surfaces with crisped, jointed fuscous hairs (3 mm long or longer) and puberulent with very short hairs, the margin appearing subfimbriate, the midrib prominent beneath, the lateral nerves about 6 pairs, fine, rather obscure, forked or divided at some distance from margin, ending in marginal glands; inflorescences in center of rosette, simple or compound subumbellate or cymose, generally abundantly pilose, the peduncles 5 to 10 cm long, the pedicels 4 to 6 cm long, slender; flowers reddish, 4 to 6 mm long; sepals very shortly united at base, narrowly oblong-lanceolate, acute, nearly equaling petals sparingly punctate, with a few long, crisped hairs; petals broadly ovate, acute or obtuse, scattered-punctate; stamens slightly shorter than petals, the anthers lanceolate, sagittate at base, acute-punctate on back; pistil slightly shorter than petals; fruit 4 to 6 mm in diameter, somewhat fleshy, reddish, sparingly punctate.

Southern China.

FUKIEN: *H. H. Chung 2825* (*Am, C*).

HONGKONG: *Ford (Missouri Bot. Gard. Herb. no. 126488; U. S. Nat. Herb. no 456033)*; *Hance 1253 (G)*; *Hongkong Bot. Gard., Herb. 8026 (A)*; *Wilford 148 (G, Ph)*; *Wright 208 (W)*.

HAINAN: *C. C. C. 8641 (A, NA)*, *9335 (NA, Y)*; *N. K. Chun & C. L. Tso 44175 (Y)*; *S. K. Lau 25452 (A)*.

KWANGTUNG: *C. C. C. 1343 (Br, G, NA, W)*, *7220 (NA)*, *8739 (NA)*, *12389 (C, NA, W)*, *14680 (C, NA)*; *N. K. Chun 40154 (Y)*; *S. K. Lau 963 (A)*; *Merrill 11094 (C, NA)*; *Y. W. Taam 308 (A)*; *W. T. Tsang 20086 (Y)*, *20922 (Y)*, *25422 (A)*, *28548 (A, W)*; *C. L. Tso 20843 (Y)*.

KWANGSI: *Ching 5664 (W, Y)*; *S. P. Ko 56039 (A)*; *H. Y. Liang 70071 (A)*; *W. T. Tsang 23252 (A)*; *C. Wang 39606 (A)*, *40654 (A)*, *40679 (A)*.

This subherbaceous species is easily recognized by its subacaulescent habit. The rosulate elliptic leaves are covered with crisped hairs which do not arise from papillæ on the upper leaf surface.

25. ARDISIA AFFINIS Hemsl.

Ardisia affinis HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 63. Based on *Ford 106* from Kwangtung, in the Kew herbarium. A photograph of the type has been examined.

Tinus affinis KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia affinis* Hemsl.

A somewhat suffrutescent undershrub, the erect stems up to 40 cm long, very slender, fuscous-puberulent especially when young, generally unbranched except for the special flowering branches; leaves petiolate (5 mm), the blade chartaceous, elliptic-ovate to oblong-lanceolate, acute or obtuse at base, obtuse to acute or subacuminate at apex, 2.5 to 6 cm long, 1 to 2 cm wide, crisped-undulate or crenate and glandular on margin, dull green above, paler beneath, punctate on both sides, glandular-puberulent beneath and usually on midrib above, the midrib prominent, the lateral nerves about 4 pairs, curved-ascending, not uniting in a distinct marginal nerve; inflorescences simple, umbellate, on curved ends of special lateral flowering branches, these 2 to 4 cm long, generally with 2 or 3 reduced leaves near apex, slender, puberulent, the pedicels about 8 mm long; flowers pale pink, 4 mm long; sepals united about $\frac{1}{3}$ their length or less, ovate, acute or subrounded, 1 mm long, the tube glandular-puberulent, the lobes glabrous, punctate, sometimes subciliate; petals ovate, acute, with a few small reddish punctations, minutely puberulent within; stamens shorter than petals, the anthers lanceolate, acute,

apiculate-punctate on back; pistil about equaling petals; fruit 7 mm in diameter, somewhat fleshy, red, not punctate.

South China.

KIANGSI: *Gressitt 1538* (*A*).

KWANGTUNG: *C. C. C. 13806* (*C, NA*); *Ford 106* (*A, Y*); *S. P. Ko 52621* (*A*), *53381* (*W*); *S. P. Kwoak 80031* (*W*); *S. S. Sin 11395* (*Y*); *C. L. Tso 21053* (*Y*).

KWANGSI: *Ching 5555* (*Su, W, Y*); *W. T. Tsang 27777* (*A*); *C. Wang 39589* (*A, W*), *40193* (*A, W*), *40891* (*A, W*).

KWEICHOW: *Y. Tsiang 5619* (*A, W, Y*).

This small member of § *Crispardisia* resembles some of the members of § *Bladhia*. It may be recognized by its very slender puberulent stems and lanceolate puberulent leaves.

26. ARDISIA CORYMBIFERA Mez.

Ardisia corymbifera MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 149. Based on *Henry 11724* and *12000A* from Szemao, Yunnan, in the Berlin herbarium. Duplicates have been examined.

A shrub up to 4 m high, the stems brownish, glabrous (except the special flowering branchlets); leaves with generally sparingly fuscous-pubescent petioles (5 to 8 mm), the blade chartaceous or membranous, narrowly oblong-lanceolate, acute at base, slenderly acuminate at apex, 11 to 15 cm long, 2 to 3 cm wide, entire or undulate, rarely scalloped (*see* discussion below), with marginal glands, dull green and glabrous above, paler, crisped-pilose, usually abundantly and finely black-punctate beneath, the midrib prominent beneath, the lateral nerves about 15 pairs, fine, inconspicuous, not uniting in a marginal nerve or this obscure, the veinlets reticulate; inflorescences compound-umbellate, fuscous-puberulent, terminal on special lateral flowering branches, these slender, up to 30 cm long, bearing a number of scattered leaves, at least the lower third bare, fuscous-puberulent, the primary rays 1 to 2 cm long, the pedicels about 1 cm long; flowers white with pink corolla throat, 6 mm long; sepals united $\frac{1}{3}$ their length or less, ovate, acute, 2.5 mm long, entire, generally punctate; petals broadly ovate, acute, minutely punctate, puberulent within near base; stamens about $\frac{2}{3}$ length of petals, the anthers ovate or broadly lanceolate, not distinctly acute, very black-punctate on back; pistil equaling petals; fruit 7 to 8 mm in diameter, reddish with small punctate glands.

Southern China.

KWANGSI: *Steward & Cheo 673* (*A, W*).

YUNNAN: *Henry 11724* (*A, W, Y*), *11724A* (*A*), *11724C* (*A*), *12000* (*A, W, Y*), *12000A* (*A, M, W, Y*), *H. T. Tsai 52454* (*A, W*), *53217* (*A, W*), *55256* (*A, W*), *55320* (*A, W*), *55626* (*A, W*), *60307* (*A, Fa*), *60326* (*A, Fa*), *60610* (*A, W*); *Y. Tsiang 12401* (*Su*), *12611* (*Su*); *C. W. Wang 73809* (*A, W*), *74125* (*A, W*), *76850* (*A, W*), *78391* (*A, W*).

This species is distinguished primarily by its fuscous-puberulent inflorescences. *Henry 9333* has distinctly scalloped leaf margins, glabrous leaf blades, and more clearly punctate fruits, but otherwise corresponds with available typical specimens.

27. ARDISIA ROSEIFLORA Pitard.

Ardisia roseiflora PITARD in Lecomte, Fl. Gén. Indo-Chine 3 (1930) 866. There are cited with the original description: "Annam: forêt de Ba-na, près Tourane, altit. 1500 m. (*Poilane*); mont Ba-na, au-dessous du sommet (Mrs. Clemens)." There have been examined a fragment of *Poilane 6913* at the Arnold Arboretum, originally from the Paris herbarium and apparently from the specimen cited by Pitard, and duplicates of *J.* and *M. S. Clemens 3915*, also from the Arnold Arboretum, and of *4251* in the United States National Herbarium, both from forests on Mount Bana. Probably one or both of these Clemens specimens are duplicates of that cited by Pitard.

A shrub up to 4 m high with a trunk diameter of 13 cm [*ex* Pitard], glabrous throughout, the branchlets smooth, grayish or reddish brown; leaves with channeled petiole (1 to 1.5 cm), the blade chartaceous, elliptic-ovate to obovate, acute at base, acute or acuminate at apex, 5 to 9 cm long, 2.5 to 4 cm wide, entire, generally recurved on margin, with marginal glands, brownish-green, slightly paler and minutely lepidote beneath, not punctate, glabrous, the midrib prominently raised beneath, lateral nerves about 10 pairs, raised on both sides, uniting in an inconspicuous marginal nerve, the veinlets generally raised-reticulate; inflorescences compound corymbose-umbellate, on ends of special lateral flowering branches, these 30 cm long or longer, bearing leaves or reduced leaves throughout their length, the bracts narrowly oblong-lanceolate, up to 1 cm long, rather persistent, the pedicels glabrous or minutely puberulent, pinkish, somewhat fleshy; flowers 7 to 8 mm long, ovate and reddish in bud; sepals shortly united at base, ovate or oblong, obtuse or rounded, 3 to 4 mm long, thin, obscurely punctate and nerved; petals thin, oblong-ovate, acute, obscurely and minutely punctate, puberulent near base within; stamens about $\frac{3}{4}$ length of petals, the anthers lanceolate, acute, not punctate; pistil nearly equaling

petals; fruit about 6 mm in diameter, obscurely punctate, the sepals persistent, involucrelike.

Indo-China and southern Kwangtung.

KWANGTUNG, Kochow: *Y. Tsiang 2117* (*W*).

This species is distinguished by its relatively large, thin, persistent sepals and bracts.

28. ARDISIA PUNCTATA Lindl. Text fig. 18.

Ardisia punctata LINDL., Bot. Reg. 10 (1824) *pl. 827;* HANCE, Ann. Sci. Nat. V. Bot. 5 (1866) 225. Based apparently on cultivated specimens originally introduced into England by John Potts in 1882 for the Royal Horticultural Society, London. The type has not been examined.

Tinus punctata KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia punctata* Lindl.

Bladhia punctata NAKAI, Bot. Mag. Tokyo 35 (1921) (99). Based on *Ardisia punctata* Lindl.

A shrub or undershrub rarely exceeding 1 m, the stems moderately slender, not over 4 mm in diameter, generally smooth, not rough-wrinkled, minutely fuscous-puberulent when young, unbranched except for the special flowering branches; leaves with puberulent petioles (1 to 1.5 cm), the blade coriaceous or thick-chartaceous, oblong to elliptic-lanceolate, acute at base, acute or acuminate or rarely obtuse at apex, about 12 cm long, 2.5 cm wide, ranging from 7 to 18 cm long, 1.5 to 4 cm wide, entire or sometimes subundulate and reflexed on margin with marginal glands, glabrous and bright green above, paler and generally densely and minutely fuscous-puberulent beneath, not punctate except along margin or obscurely so within, the midrib prominent, the lateral nerves about 12 pairs, uniting in a generally conspicuous marginal nerve at about $\frac{1}{3}$ distance from margin to midrib, the veinlets obscure, reticulate; inflorescences simple, subumbellate, occasionally compound-umbellate, on curved ends of special lateral flowering branches, these usually 3 to 10 cm long, with a few leaves or leaflike bracts below inflorescence, minutely fuscous-puberulent, the central pedicels shortest, the outer pedicels about 1 cm long, becoming up to 2.5 cm long in fruit, the bracts minute, deciduous; flowers generally white, about 5 mm long; sepals shortly united at base, oblong-lanceolate or ovate, generally acute, 2 to 3 mm long, ciliate or eciliate, punctate, minutely puberulent; petals elliptic-ovate, generally rounded, conspicuously punctate, minutely puberulent within toward base; stamens about 3 mm long, the anthers lanceolate, sometimes

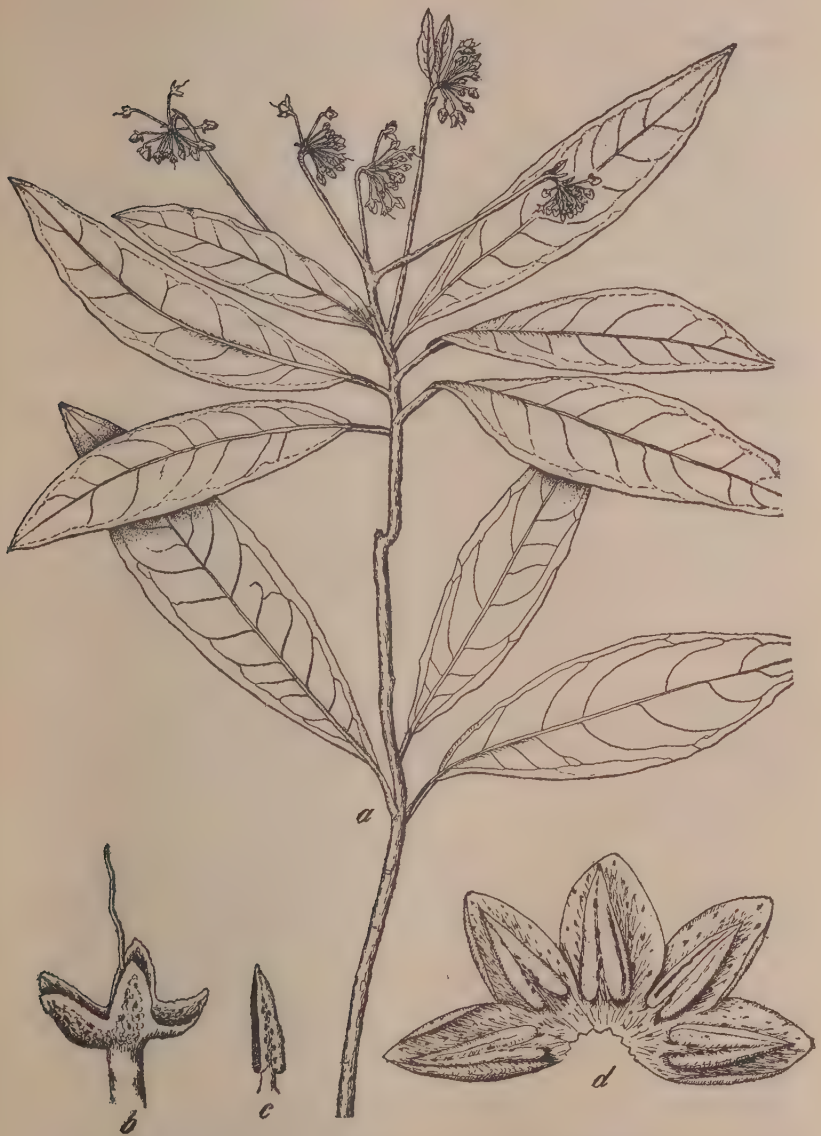

FIG. 18. *Ardisia punctata* Lindley. *a*, upper part of plant with inflorescences, × ½; *b*, sepals with pistil, × 5; *c*, stamen, back view, × 5; *d*, corolla and stamens, × 5. Drawn from *Y, Tsiang 606* (*A*).

apiculate, punctate on back; pistil about equaling petals, the ovary ovoid, minutely puberulent, punctate, the style slender; fruit about 6 mm in diameter, generally dark red, scattered-punctate, the exocarp frequently somewhat fleshy.

Southern China.

KIANGSI: *Handel-Mazzetti 249* (*V*).

CHEKIANG: *Ching 2039* (*A, C, W*); *Y. L. Keng 119* (*A*).

FUKIEN: *H. H. Chung 1290* (*Am, C*), *2246* (*A, Am*),[40] *2659* (*Am*), *2750* (*Am, C*), *3705* (*A, Am, C*), *8087* (*A*); *Fong 156* (*C*); *Fukien Christ. Univ. 523* (*C*), *1499* (*C*), *12139* (*C*); *Warburg 5774* (*V*).

HONGKONG: *W. Y. Chun 5038* (*C*); *Hongkong Bot. Gard., Herb. 1085* (*A*); *Y. Tsiang 606* (*A*),[41] *831* (*A, C, Y*), *Wright 485* (*G, Y*).

KWANGTUNG: *C. C. C. 155* (*A*), *3171* (*A, G, M, NA*), *6418* (*Y*), *6527* (*NA, Y*), *6883* (*NA*), *12182* (*C, NA, W*), *13200* (*C, NA*), *14058* (*C, NA*), *14246* (*C, NA*), *15044* (*C*), *18923* (*Y*); *W. Y. Chun 3092* (*A*), *3135* (*A*), *5589* (*A*); *H. T. Ho 60042* (*Y*), *S. K. Lau 628* (*A*), *2097* (*A*); *S. Y. Lau 20285* (*Y*); *T. N. Liou 7578* (*Y*); *Mell 709* (*A*); *Merrill 11048* (*NA*); *Y. W. Taam 127* (*A*); *W. T. Tsang 20427* (*Y*), *21165* (*NA, Y*), *24903* (*A*), *28539* (*A, W*); *Y. Tsiang 637* (*A, C*), *831* (*A, C, Y*), *1546* (*C*), *1734* (*C, Y*); *C. L. Tso 20400* (*Y*).

KWANGSI: *C. Wang 40571* (*A, W*).[42]

This species is distinguished by its fuscous-puberulent stems, inflorescences, and leaves, and by the rather prominent marginal nerves, these at a greater distance from the margin than in any other species.

In the literature this species is much confused, especially with *A. crenata* Sims [usually called by error *A. crispa* (Thunb.) A. DC.], notably in Bentham's Flora Hongkongensis.(1) H. F. Hance in 1866(18, p. 226) endeavored to differentiate these species, stressing the smaller form of *A. punctata* and its reddish puberulent branchlets, peduncles, and calyx lobes, contrasted with the higher and glabrous *A. crenata*. No one seems to have noted the distantly placed marginal nerves in the leaves.

[40] These numbers in the University of California are *Ardisia crenata* Sims.

[41] *See* footnote 40.

[42] This specimen is slenderer and more delicate than the others, and may be a distinct variety.

28a. ARDISIA PUNCTATA var. LATIFOLIA Walker var. nov.

Folia latiora, 11 ad 18 cm lata, elliptico-ovata, subtus pilis minimis, glandulis punctatis prominentioribus aequius dispersis nervibus lateralibus 8 ad 10 jugis, vix in nervem marginalem confluentibus, venulis prominentioribus elevatis reticulatis; flores majores, 7 mm longi, sepalis (3.5 mm longis) petalisque (6 mm longis) glabris, margine planis, antheris dorso non punctatis.

Differs from the typical form of the species in its broader (11 to 18 cm), elliptic-ovate leaves, the pubescence beneath finer (*visible* with a strong lens), the punctate glands more prominent and evenly distributed, not more abundant near margin, the lateral nerves only about 8 to 10 pairs, hardly uniting in a definite marginal nerve, the veinlets more prominent, raised, reticulate; flowers larger (7 mm long); sepals 3.5 mm long, entire, not puberulent; petals 6 mm long, not puberulent; anthers not punctate on back.

Type in the United States National Herbarium, *no. 1717765*, collected by *S. P. Ko, no. 51432*, at "Fen Sui Ou, Sick Chei Loung," Sunyi District, Kwangtung, May 8, 1931, for Sun Yat-sen University; duplicate at the New York Botanical Garden. An additional specimen examined is *C. Wang 32159* (*W*), also from Sunyi, Kwangtung, collected April 22, 1932.

29. ARDISIA BREVICAULIS Diels.

Ardisia brevicaulis DIELS, Bot. Jahrb. Engler 29 (1900) 519. Based on *Bock* and *A. von Rosthorn 233* from forest at Liang-t'ien-wan, Nan-ch'uan, Szechwan, in the Berlin herbarium. A photograph of the type has been examined.

Ardisia Bodinieri LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 461. Based on a collection by E. Bodinier from Kweichow, January 14, 1898. A duplicate has been examined.

A low undershrub with creeping rhizome, the erect stem about 15 cm high, puberulent when young, unbranched except for the special flowering branches; leaves with puberulent petiole (up to 2 cm), the blade chartaceous, narrowly ovate or lanceolate, obtuse to rounded at base, rather slenderly acute or slightly acuminate at apex, 14 to 18 cm long, 4 to 6 cm wide, entire, obscurely glandular and very narrowly or not at all reflexed on margin, generally black-punctate on both sides (the dots raised beneath and especially abundant along margin), generally glabrous above, minutely ferruginous-puberulent beneath, the midrib prominently raised beneath, the lateral nerves 12 to 15 hairs, raised beneath, conspicuously curved-ascending, sometimes uniting in an

irregular marginal nerve not close to margin, the veinlets reticulate; inflorescences simple, umbellate, terminal on special lateral or axillary branches, these about 6 cm long, puberulent, usually with one or two leaves or leaflike bracts subtending umbel, the pedicels 1 cm long; flowers pink; 4 to 5 mm long; sepals shortly united at base, 2 to 3 mm long, lanceolate or narrowly ovate, acute, 2 to 3 mm long, entire or finely ciliate, distinctly black-punctate, glabrous or sparingly puberulent; petals ovate, acute, sparingly puberulent within, prominently black-punctate, glabrous outside; stamens shorter than petals, the anthers lanceolate, acute to apiculate, black-punctate on back; pistil about equaling petals; fruit about 6 mm in diameter, red, scattered-punctate, the endocarp sometimes somewhat fleshy.

Szechwan and Yunnan to Formosa.

FORMOSA: *Wilson 10313* (*A*).

KIANGSI: *Y. Tsiang 10160* (*Su, Y*); *Handel-Mazzetti 287* (*V*).[43]

HUPEH: *Wu-han Univ., Herb. Nat. 1758* (*A, Y*).

HUNAN: *C. S. Fan & Y. Y. Li 62* (*A*); *Handel-Mazzetti 11476* (*V*).

FUKIEN: *H. H. Chung 2958* (*A, Am*); *Handel-Mazzetti 287* (*V*).[44]

KWANGTUNG: *H. Y. Liang 61338* (*Y*); *S. S. Sin 11105* (*Y*); *W. T. Tsang 20788* (*Y*), *21550* (*A, Y*); *C. L. Tso 20674* (*Y*).

KWEICHOW: *Bodinier*, January 14, 1898 (*A*); *Handel-Mazzetti 10718* (*V*); *Y. Tsiang 5591* (*Su, W, Y*), *7526* (*W*), *8517* (*Y*).

SZECHWAN: *Bock & A. von Rosthorn 233* (*A*); *Y. S. Liu 1687* (*A*).

YUNNAN: *H. T. Tsai 51403* (*A, Fa*).

This species differs only slightly from *Ardisia punctata*, having broader and more punctate leaves with obtuse or rounded rather than acute bases, the marginal nerves less distinct and more intermittent, and a shorter stem (about 15 cm), the creeping habit thus more evident. It apparently occurs in shaded places in forests.

30. ARDISIA CONSPERSA Walker. Text fig. 19.

Ardisia undulata MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 146. [not *A. undulata* C. B. Clarke, in Hook. f., Fl. Brit. Ind. 3 (1882) 524]. Based on *Henry 10779* from Yunnan in the Berlin herbarium. A duplicate has been examined.

[43] This specimen bears a label designating it as from Kiangsi and Fukien, the precise locality being "Dunghwa-schan inter Schitscheng et Ninghwa."

[44] *See* footnote 40.

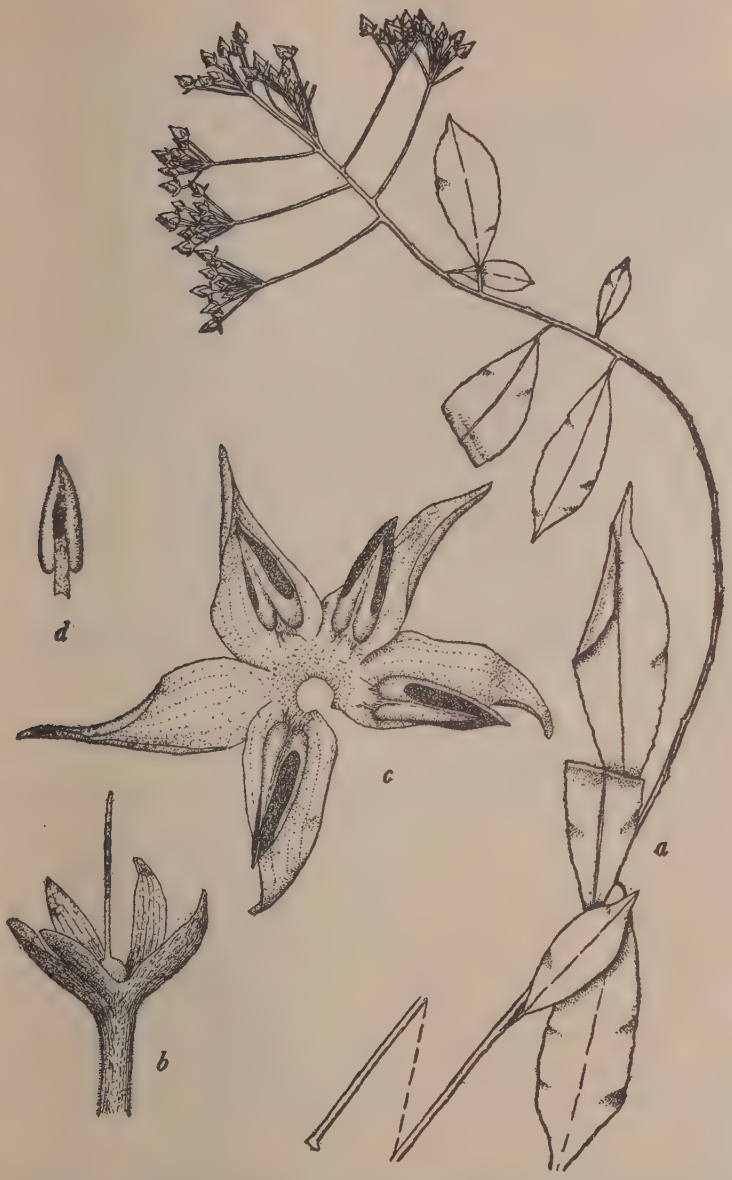

FIG. 19. *Ardisia conspersa* Walker. *a*, special flowering branch, × ½; *b*, flower without corolla, × 5; *c*, corolla, × 5; *d*, stamen, back view, × 5. Part *a* drawn from a type collection, *Henry 10779* (*A*); parts *b* to *d* from *H. T. Tsai 60521* (*W*).

Ardisia conspersa WALKER, Bull. Fan Mem. Inst. Biol. 9 (1939) 160, *pl. 19*. Based on *Ardisia undulata* Mez, not *A. undulata* C. B. Clarke.

A shrub nearly 2 m high, the main stem unknown; leaves with pilose or puberulent channeled petiole (5 to 8 mm), the blade membranous, elliptic- or oblong-lanceolate or oblanceolate, acute at base, rather abruptly and slender acuminate at apex, 8 to 10 cm long, 2 to 3 cm wide, entire or finely scalloped at marginal glands, dull green and glabrous above, paler and pilose (especially on midrib) and black-punctate beneath, the hairs short, crisped, the midrib more or less prominent beneath, the lateral nerves about 15 pairs, very fine, scarcely raised, not curved-ascending, not uniting in a marginal nerve; inflorescences compound-corymbose-paniculate, puberulent, terminal on special lateral flowering branches, these about 50 cm long, slender, puberulent, bearing a number of scattered leaves, the lower third bare, the primary rays 3 to 4 cm long, subumbellately arranged, the pedicels slender, about 1 cm long; flowers pink, 6 mm long; sepals shortly united at base, oblong-ovate, acute, 3 mm long, entire, not at all punctate, puberulent at base; petals oblong-ovate, acute, not at all black-punctate, densely puberulent within; stamens $\frac{2}{3}$ the length of petals, the anthers lanceolate, dark but not punctate on back; pistil nearly equaling petals; fruit unknown.

YUNNAN: *Henry 10779* (*A, M, Y*); *H. T. Tsai 60345* (*A, W*), *60521* (*A, W*), *61146* (*A, W*).

This species is most closely allied to *A. corymbifera* Mez and *A. caudata* Hemsl. From the first it differs in its corymbose rather than compound-umbellate inflorescences and in the absence of punctate glands in the flowers, these most notably lacking on the connective of the anthers. From *A. caudata* it differs in its pilose and punctate lower leaf surfaces, in its corymbose inflorescences, and in the absence of punctate glands in the flowers.

The name *A. conspersa* refers to the very prominent scattering of the special flowering branches, as well as to the dispersion of the primary branches of the inflorescence along the main axis, forming a corymb rather than a subumbellate inflorescence, which is more common in this section.

31. ARDISIA CAUDATA Hemsl.

Ardisia caudata HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 63. Based on *Faber 664* [number not cited in the original description] from

Mount Omei, Szechwan, in the Kew herbarium. A photograph and fragment have been examined.

Tinus caudata KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *A. caudata* Hemsl.

A branching shrub or undershrub probably 1 m high or less, the stems rather slender, brownish, fuscous-puberulent when young, probably unbranched except for the special flowering branches; leaves with fuscous-puberulent petiole (5 to 8 mm), the blade membranous, oblong- or elliptic-lanceolate, obtuse or acute at base, generally long and slenderly acuminate or subcaudate at apex, 8 to 12 cm long, 2.5 to 3.5 cm wide, crenulate or crisped-undulate with marginal glands, dark green above, paler and minutely scattered-lepidote beneath, glabrous, not black-punctate, the midrib more or less prominent beneath, the lateral nerves 8 pairs, slightly raised, curved-ascending, not forming a marginal nerve; inflorescences compound-subcorymbose-umbellate, many-flowered, fuscous-puberulent throughout, terminal on very slender lateral branches, these 4 to 20 cm long, generally with a few leaves on upper third, the primary rays up to 1.5 cm long, the pedicels slender, up to 1 cm long; flowers reddish, 5 to 7 mm long; sepals shortly united at base, oblong-ovate or lanceolate, acute, 3 to 4 mm long, obscurely punctate, glabrous or fuscous-puberulent on lower part; petals ovate, acute, sparingly or not at all punctate, minutely puberulent within near base; stamens about $\frac{2}{3}$ length of petals, the anthers lanceolate, with a few small, blank punctations on back; pistil slightly shorter than petals; fruit 5 mm in diameter, dark reddish or black, punctate with small glands.

Southwestern China.

KWANGTUNG: *S. P. Ko 51267* (*Y*)?

KWEICHOW: *Y. Tsiang 9259* (*W, Y*).

SZECHWAN: *Faber 664* (*A, Y*).

YUNNAN: *Henry 9852* (*W, Y*), *11356* (*A, W, Y*), *13671* (*Y*); *H. T. Tsai 51740* (*A*).

This species is distinguished by its membranous, nonpunctate leaves, usually with long slender apices, by the very slender stems, and in most specimens by the usually obscurely punctate flowers. *Henry 13671* has sepals which are broadly ovate and distinctly black-punctate, but otherwise agrees well with the type and the other specimens cited.

32. ARDISIA ELEGANS Andr.

Ardisia elegans ANDR., Bot. Repos. 10 (1810)[45] *pl. 623*. Based on a cultivated specimen in England, originally from "Pulo-Pinang," Malay Peninsula.

Ardisia crispa var. *elegans* A. DC, in DC., Prodr. 8 (1844) 134. Based on *Ardisia elegans* Andr.

Ardisia elegantissima LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 373. Based on *Bodinier 665* from Happy Valley, Hongkong, June 20, 1894. The type in the Léveillé herbarium has been examined.

Ardisia Konishii HAYATA, Icon. Pl. Formosa 5 (1915) 89. Based on *Herb. Gov't. Formosa 22090*, collected in Hainan by S. Konishi, June 10, 1909. A fragment in the University of California, *no. 322643*, has been examined.

Bladhia elegans KOIDZUMI, Bot. Mag. Tokyo 39 (1925) 308. Based on *Ardisia elegans* Andr.

A shrub about 1 m high, glabrous throughout, the stems somewhat thickened, glabrous, probably unbranched except for the special flowering branches; leaves with channeled and narrowly winged petiole (0.5 to 1.5 cm), the blade chartaceous, elliptic-lanceolate, oblanceolate or rarely ovate, acute at base, acute or acuminate at apex, about 12 cm long, 3 cm wide, ranging from 6 to 15 cm long, 2 to 4 cm wide, subentire and crisped or distinctly scalloped at the marginal glands, sometimes slightly reflexed, dull green above, paler and generally minutely lepidote beneath, not punctate or rarely obscurely so beneath margin, the midrib prominent beneath, the lateral nerves about 12 to 15 pairs, fine, raised slightly more below than above, the marginal nerve obscure or wanting or rarely distinct, the veinlets obscure; inflorescences compound-umbellate or corymbose-paniculate, terminal on special lateral branches, these 30 to 50 cm long, slender, curved at apex, bearing a number of scattered leaves usually not confined to upper third, the primary rays 2 to 4 cm long, the pedicels slender, about 1 cm long, glabrous or sparingly puberulent; flowers pink, 6 mm long; sepals shortly united at base, ovate or oblong-ovate, acute, 2.5 mm long, entire, rather thin-margined, not punctate; petals broadly ovate, obtuse or acute, not punctate, minutely puberulent at base within; stamens about $\frac{2}{3}$ length of petals, the anthers ovate or lanceolate, acute, not punctate; pistil equaling petals; fruit 6 to 9 mm in diameter, reddish or black, punctate, often obscurely so.

[45] For discussion of the dates of issue of H. Andrews, The Botanical Repository, *see* H. Harms in Notizbl. Bot. Gart. Berlin 4 (1906) 243–245, where the date of this part is given as 1810; and J. Britten in Journ. Bot. Brit. & For. 54 (1916) 236–246, where the year 1811 is given.

Southeastern China.

HONGKONG: *Bodinier 534* (*Y*),[46] *665* (*A, E*); *Hongkong Bot. Gard., Herb. 1755* (*A*), *4517* (*A*), *8027* (*A*); *Wright 206* (*G*).

HAINAN: *C. C. C. 8073* (*A, M, NA, Y*), *8337* (*NA*), *8504* (*C, NA*), *8534* (*NA*), *9338* (*NA, W*), *14251* (*NA*), *15570* (*A, C, NA, W*), *17552* (*A, C, W, Y*); *N. K. Chun & C. L. Tso 43404* (*A, W, Y*), *44037* (*A, W, Y*); *Formosa, Herb. Gov't. 22090* (*C*); *Gressitt 866* (*A*), *1009* (*A*); *F. C. How 71784* (*A, W*); *F. C. How & N. K. Chun 70142* (*A, W, Y*); *S. K. Lau 79* (*A, W*), *1798* (*A, Y*), *3156* (*A*), *4995* (*A, W*)*?*, *24381* (*W*), *25460* (*A, W*); *C. I. Lei 250* (*Y*), *725* (*A, Y*); *Y. Li 10637* (*W*); *H. Y. Liang 61609* (*A, W, Y*), *62050* (*W, Y*), *62598* (*W, Y*), *63274* (*W, Y*), *64320* (*W, Y*), *65018* (*W, Y*); *Nanking, Herb. Univ. 5840* (*C*), *6840* (*C*), *7050* (*C*); *C. Wang 33746* (*W, Y*), *34199* (*W, Y*), *35435* (*W, Y*), *35776* (*W, Y*), *36314* (*W, Y*).

KWANGTUNG: *C. C. C. 14251* (*C*), *18820* (*Y*)*?*, *19816* (*Y*); *W. Y. Chun 6002* (*A*); *S. P. Ko 50102* (*Y*); *S. K. Lau 855* (*A*), *2778* (*A*); *Merrill 10323* (*NA, Y*); *Y. W. Taam 846* (*A*); *C. L. Tso 20363* (*Y*), *20454* (*Y*), *21194* (*A*); *T. M. Tsui 357* (*W, Y*).

KWANGSI: *Ching 5622* (*A, W, Y*), *7888* (*A, W, Y*); *S. P. Ko 55174* (*A, W*); *Morse 644* (*Y*); *W. H. Soo 68482* (*W*); *Steward & Cheo 763* (*A*); *W. T. Tsang 22509* (*A, W*); *C. Wang 39022* (*A, W*), *39948* (*A*); *Y. C. Wang 5024* (*Su*).

This species was considered by Mez as a synonym of *A. crenata* Sims, which he referred to *A. crispa* (Thunb.) A. DC. It may, however, be distinguished from that species by its almost total lack of punctations and by its compound and more corymbose inflorescences on the ends of longer special flowering branches, these with leaves scattered almost throughout their length. These two species have apparently been confused for a long time. The various published illustrations show a mixture of characters not generally conforming with those shown by the specimens assembled here. The illustration published with the original description of *A. elegans* agrees, however, fairly well with these specimens.

Among the specimens here cited there seem to be two types of leaf margins, one distinctly scalloped, agreeing with Andrews's illustration, the other not scalloped but distinctly crinkled. The former appears to have less definite marginal nerves and larger bluish-black fruits with sepals about 3 mm long, the latter, more

[46] This is a photograph of a Kew specimen mounted with *Henry 11328*.

definite marginal nerves, smaller reddish fruits, and sepals about 2 mm long. However, these are relative characters only and intergradations destroy their importance. The specimens with scalloped leaves are clearly *A. elegans;* the others possibly may to be considered distinct, under the name *A. Konishii* Hayata. However, it does not seem feasible to separate these until more definite limits can be ascertained, which probably requires the growing of plants from various areas and under differing conditions.

33. ARDISIA CRENATA Sims.

Ardisia crenulata LODD., Bot. Cab. 1 (1817) *pl. 2, nomen nudum.* Based on a cultivated plant from China.

Ardisia crenata SIMS, Curtis's Bot. Mag. 45 (1818) *pl. 1950.* Proposed as a new name for the preceding and accompanied by a description.

Ardisia lentiginosa J. B. KER, Bot. Reg. 7 (1821) *pl. 533.* Proposed as a change of the name *A. crenata* Sims because of *A. crenata* Roxb. Hort. Beng. (1814) 85. The latter name, however, was a *nomen nudum* until the publication of a description by Roxburgh in 1824.(53, 2 p. 276) This name has frequently been used in Japan for the species differentiated from *Bladhia crispa* Thunb.

Ardisia crispa (Thunb.) A. DC., as misapplied by A. DeCandolle in Trans. Linn. Soc. 17 (1834) 124; DC., Prodr. 8 (1844) 134. DeCandolle transferred Thunberg's name but described *A. crenata* Sims, which he placed as a synonym. (For further discussion *see* below.)

Tinus crispa KUNTZE, Rev. Gen. Pl. 2 (1891) 405. Based on *Bladhia crispa* Thunb.

Ardisia Labordei LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 373. Based on *Bodinier* (*J. Laborde*) *2512* (erroneously given as *J. Laborde 2512*), from Kweichow, March 8, 1898. A photograph and fragment at the Arnold Arboretum of the type in the Léveillé herbarium have been examined.

Ardisia crispa var. *Taquetii* LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 374. Based on *Tuquet 2975*, from forest at Hongno, Quelpart Island, Korea, October 1909, in the Léveillé herbarium. The type has been examined.

Bladhia crispa var. *Taquetii* NAKAI, Bot. Mag. Tokyo 35 (1921) (98) Based on the preceding name.

Ardisia Taquetii LÉVEILLÉ *in litt.* in Nakai, Fl. Sylvat. Kor. 13 (1923) 16. Based on *Ardisia crispa* var. *Taquetii* Léveillé.

Bladhia lentiginosa NAKAI, Trees & Shrubs Indig. Jap. rev. ed. 1 (1927) 283. Based on *Ardisia lentiginosa* Ker.

Bladhia lentiginosa var. *Taquetii* NAKAI, Trees & Shrubs Indig. Jap. rev. ed 1 (1927) 283. Based on *Ardisia crispa* var. *Taquetii* Léveillé.

An erect shrub or undershrub up to 1.5 m high, the leaf-bearing stems and branchlets glabrous, rather thick, grayish brown, generally rough, unbranched except for the greenish, smooth, special flowering branches; leaves petiolate (about 1 cm), the blade coriaceous or chartaceous, elliptic-lanceolate or oblanceolate, acute or cuneate at base, acute or acuminate at apex, about 10 cm long, 2.5 cm wide, ranging from 6 to 20 cm long, 2 to 4 cm wide, generally crisp or undulate, with large albuminous marginal glands, shining green above, paler beneath, usually raised-punctate at least beneath, very sparingly lepidote beneath, glabrous, the midrib prominent beneath, the lateral nerves 12 to 18 pairs, fine, inconspicuous above, slightly raised beneath, uniting in a generally distinct marginal nerve, this often hidden beneath recurved edge; inflorescences simple, umbellate or cymose, glabrous, terminal on special lateral or axillary flowering branches, these about 10 cm long, sometimes up to 16 cm long, rarely longer, bearing a few leaves generally only at or close to the curved apices, or occasionally leaves more scattered along flowering branches, the primary rays 2 to 4 cm long, the pedicels 0.5 to 1 cm long; flowers whitish or pinkish, 4 to 6 mm long; sepals shortly united at base, oblong-ovate, rounded or obtuse, generally 1.5 mm long or less, rarely 2.5 mm long, entire, scattered-punctate, glabrous; petals ovate, acute, punctate, the dots rather small, papillose near base within; stamens shorter than petals, the filaments very short, thick, the anthers triangular-lanceolate, acute, distinctly scattered-punctate on back, the pistil nearly equaling petals; fruit 5 to 8 mm in diameter, dark reddish, smooth, punctate, sometimes somewhat fleshy.

Eastern Asia.

JAPAN: *Maximowicz*, Nagasaki, 1863 (*G, W, Y*); *Oldham 555* (*G*); *K. Shiota Herb. 4777* (*A*), *5366* (*A*); *T. Tanaka 397* (*C*); *Wilson 6043* (*A*), *6044* (*A*), *6054* (*A*), *6210* (*A*); *Wright, Oshima* (*W*).

LIU KIU ISLANDS: *R. Kanehira 3284* (*Y*).

FORMOSA: *Bartlett 6087* (*W*); *U. Faurie 336* (*A*); *Formosa, Herb. Gov't. W172* (*A*); *Wilson 9696* (*A, W*).

CHOSEN: *Faurie 738* (*A*), *1896* (*A*); *Taquet 2973* (*A*), *2974* (*A*), *2975* (*E*); *3126* (*A*); *Wilson 9380* (*A*), *9492* (*A*).

ANHWEI: *Ching 2945* (*A, C, W*), *3328* (*A, C*); *S. C. Fan & Y. Y. Li 137* (*A*); *Nanking, Herb. Univ. 7584* (*C*), *7852* (*C*).

HUPEH: *Henry 3265* (*G*); *Nanking, Herb. Univ. 3619* (*A*), *3964* (*A*); *Wilson 1981* (*A, W*); *Wu-Han Univ., Herb. Nat. 1973* (*A, Y*).

CHEKIANG: *Ching 1950* (*A, C, W*); *Y. L. Keng 237* (*A*), *795* (*A*), *1162* (*C*); *Macgregor ABC* (*A*), *XYZ* (*A*); *Nanking, Herb. Univ. 14611* (*A, C, W*).

KIANGSI: *Gressitt 1504* (*A*), *1513* (*A*), *1611* (*A*); *H. H. Hu 1124* (*A*); *S. K. Lau 4257* (*A, W*); *Y. Tsiang 10031* (*Y*).

HUNAN: *C. S. Fan & Y. Y. Li 679* (*A*); *Handel-Mazzetti 479* (*A*), *11421* (*W*).

FUKIEN: *H. H. Chung 861* (*Am*), *980* (*Am, C*), *1056* (*A, Am, C*), *1163* (*A, Am, C*), *1719* (*A, C*), *2096* (*A*), *2246* (in *C.* only), *2461* (*A, Am, C*), *2732* (*Am, C*), *3333* (*Am, A*), *6428* (*A*); *Fong 233* (*C*), *254* (*C*); *Fukien Christ. Univ. 213* (*C*), *648* (*C*), *1038* (*C*), *1105* (*C*), *1669* (*C*), *2967A* (*C*), *3025* (*C*), *3308* (*C*), *3490* (*C*), *5745* (*M*), *5778* (*A*), *6788* (*A*); *Handel-Mazzetti 398* (*V*); *Norton 1355* (*W*); *Warburg 5774* (*A only*).[47]

HONGKONG: *Y. Tsiang 606* (*C only*); *Wright 206*, in part (*W*), *207* (*G*).

HAINAN: *C. C. C. 7897* (*A, NA, Y*); *Henry 8417* (*G*).

KWANGTUNG: *C. C. C. 284* (*A, NA, W, Y*), *7247* (*NA*), *9088* (*NA*), *13730* (*C, NA*), *16526* (*A, NA, W*), *18431* (*Y*); *W. Y. Chun 5505* (*A*), *5569* (*A*); *Kuntze 3429* (*Y*); *S. Y. Lau 20273* (*Y*); *W. T. Tsang 20637* (*Y*), *20862* (*Y*), *21009* (*A, Y*), *21717* (*A, Y*), *25924* (*A*), *25399* (*A*); *Y. Tsiang 1724* (*C*); *T. M. Tsui 392* (*W, Y*); *Y. K. Wang 361* (*A, C, Y*).

KWANGSI: *L. H. Chun 91215* (*A*); *Z. S. Chung 81675* (*A*), *83313* (*A*), *83660* (*A*); *S. P. Ko 55935* (*Su*); *Steward & Cheo 144* (*A, W*); *W. T. Tsang 23340* (*A*), *27755* (*A*).

KWEICHOW: *Bodinier 2512* (*A*); *Steward, Chiao, & Cheo 855* (*A*); *S. W. Teng 1477* (*Su*); *Y. Tsiang 4288* (*W*), *4434* (*W*), *6639* (*W*), *7545* (*W*).

YUNNAN: *Forrest 806* (*E*), *7918* (*E*), *8060* (*E*), *8605* (*E*), *9352* (*E*), *9469* (*A*), *13687* (*A*), *17486* (*E*), *17979* (*E*), *19243* (*A*), *19909* (*A*), *24637* (*E*), *27980* (*E*), *29409* (*W*); *Henry 9791* (*A, M, W, Y*), *9791A* (*A, M, W, Y*), *11328* (*A, Y*); *Rock 7144* (*A*), *7541* (*A, W*), *7672* (*A, W*); *H. T. Tsai 51432* (*A, W*), *52347* (*A, W*), *54299* (*A, W*), *54901* (*A, W*), *56608* (*A, W*), *58766* (*A, W*), *58832* (*A, W*), *59081?* (*A*); *C. W. Wang 66901* (*A, W*), *67152* (*A, W*), *72478* (*A, W*), *72537* (*A, W*), *76853* (*Fa*).

[47] This number in Vienna is *A. punctata* Lindl.

SZECHWAN: *S. F. Chang 953 (Su); C. S. Fan & Class 42 (A); W. P. Fang 372 (W), 3780 (A); Hugh (1899) (A); Wilson 4066, in part (A).*

SOUTHEASTERN TIBET: *Forrest 19243 (A), 19909 (A).*

This is the most widely distributed species of *Ardisia,* occurring from Japan to Tibet, the Philippine Islands, and southern Asia. It is accordingly very variable. It is widely cultivated in Europe and the United States, as well as in Japan and China, usually under the erroneous name *Ardisia crispa* (Thunb.) A. DC. Many varieties are said to be in cultivation in Japan.(47) Because of DeCandolle's error in 1834(5) in placing *Ardisia crenata* Sims as a synonym under *Ardisia crispa* A. DC., which he based on *Bladhia crispa* Thunb. but to which he attached a description of *A. crenata* Sims, the literature has become exceedingly confused. This error was not corrected in Mez's monograph. It was first clearly noted by H. Handel-Mazzetti in 1936, (19, p. 756) this interpretation being partly adopted by A. Rehder in 1937(50, 18 p. 232) and further elucidated by Walker in 1939.(61)

Among the available specimens from Japan are several with unusually long flowering branches with scattered leaves. These correspond to Kaempfer's illustration published by Joseph Banks in 1791(25, pl. 7). It may represent a horticultural form of this species or one of the species placed among the synonyms of *A. crenata* Sims, but until more specimens can be obtained and studies made of the cultivated varieties, these apparently aberrant forms are included here.

34. ARDISIA BICOLOR Walker sp. nov. Text fig. 20.

Frutex circa 30 cm altus, caulibus ex rhizomate erectis, glabris, viridibus, praeter ramulos speciales floriferos simplicibus; folia chartacea, elliptico-lanceolata, basi acuta, apice acuta vel acuminata, 7 ad 13 cm longa, 1.5 ad 3.5 cm lata, margine crispata vel crenulata, bene glandulosa, supra nitida viridis, subtus maturite purpurea vel rubescentia, punctata punctulis elevatis, nervibus lateralibus circa 14 jugis, in nervulum inaequalem et non manifestum marginalem confluentibus; inflorescentiae simplices subumbellatae in apicibus ramulorum specialium floriferorum, 4 ad 10 cm longorum, glabrorum vel minutissime puberulentorum, foliis paucis prope apicem donatorum; flores ignoti; sepala fructuosa ovata vel oblongo-ovata, obtusa vel rotundata, 1.5 ad 2 mm longa, punctata; fructus 5 ad 6 mm diametro, punctatus punctulis parvis.

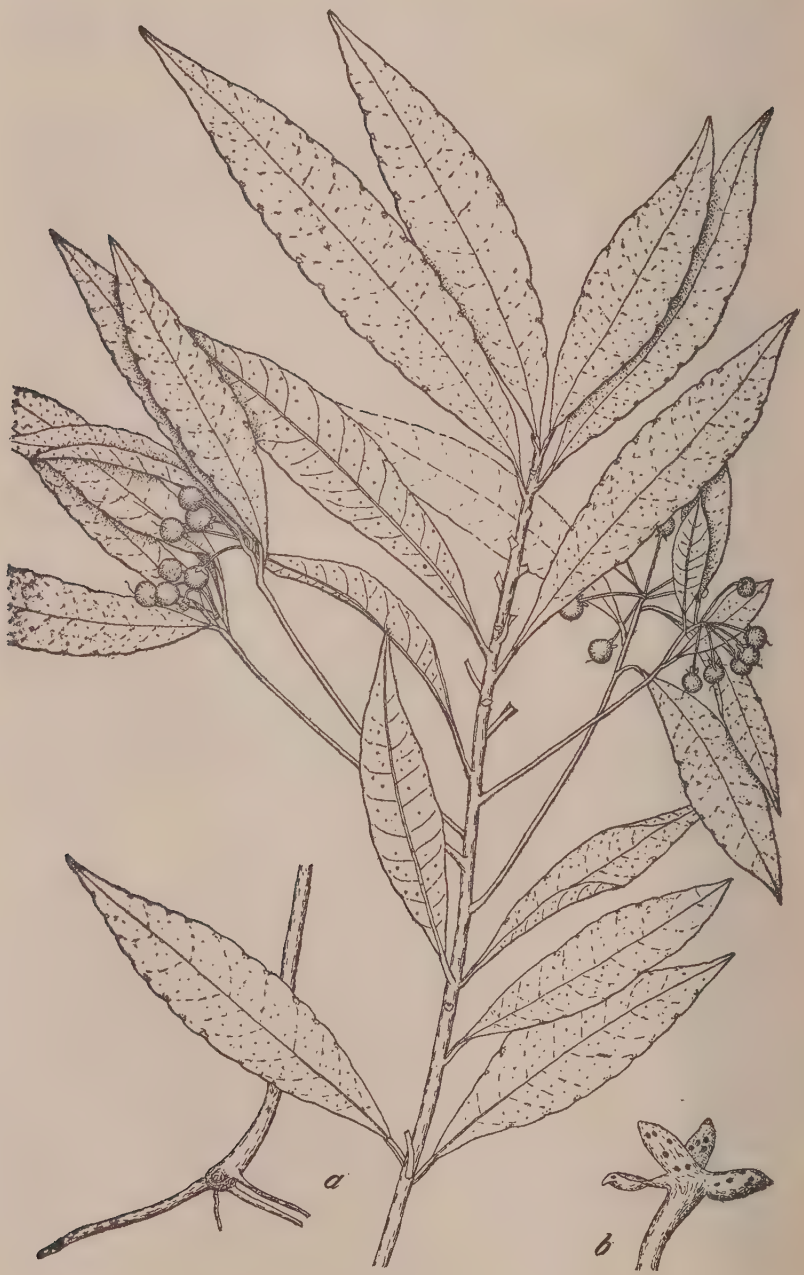

FIG. 20. *Ardisia bicolor* Walker sp. nov. *a*, whole plant, × ½; *b*, calyx, × 5. Drawn from the type, *Steward, Chiao, & Cheo 155 (A)*.

An undershrub about 30 cm high, with creeping rhizome and somewhat fleshy roots, the erect stems unbranched except for the special flowering branches, greenish, smooth, and very minutely puberulent when young, becoming light brown; leaves with channeled petiole (5 to 10 mm), the blade chartaceous, elliptic-lanceolate, acute at base, slenderly acute to acuminate at apex, 7 to 13 cm long, 1.5 to 3.5 cm wide, crisped or crenulate and slightly recurved on margin, with marginal glands, dark glossy green above when fresh [*ex Steward, Chiao* and *Cheo 155*], paler beneath when young, becoming reddish or purplish when mature, punctate with raised glands on both surfaces, the midrib raised beneath, the lateral nerves about 14 pairs, uniting in an irregular and inconspicuous marginal nerve; inflorescences simple, subumbellate, terminal on special lateral flowering branches, these 4 to 10 cm long, glabrous or very minutely puberulent, with a few leaves near apex, the pedicels 1 to 1.5 cm long; flowers unknown; sepals in fruit ovate to oblong-ovate, obtuse or rounded, 1.5 to 2 mm long, punctate, glabrous; fruit (immature) 5 to 6 mm in diameter, greenish to purplish, punctate, the glands rather small.

Type in the herbarium of the Arnold Arboretum, collected by *A. N. Steward, C. Y. Chiao,* and *H. C. Cheo, no. 155,* on a forested rocky slope, altitude 900 m, at Liang Feng Yah, Tsunyi Hsien, Kweichow, August 3, 1931. An additional specimen examined is *Z. S. Chung* [48] *83491* from Kwangsi, without precise data, also at the Arnold Arboretum.

This species most nearly resembles *A. crenata* Sims, from which it may be most readily distinguished by the reddish or purplish under surfaces of the mature leaves.

35. ARDISIA HANCEANA Mez.

Ardisia Hanceana Mez, in Engl., Pflanzenreich 9 (IV. 236) (1902) 149. Based on *Hance 263, in part,* from Hongkong, in the Berlin, Paris, and Vienna herbaria. This collection has not been examined.

A shrub 0.5 to 1.5 m high, possibly higher, glabrous throughout, the stems somewhat thick, grayish brown, unbranched except for the special flowering branches; leaves petiolate (up to 1 cm), the blade chartaceous, elliptic- or oblong-lanceolate, sometimes oblanceolate, acute at base, long acute or acuminate at apex, 10 to 16 cm long, 1.5 to 2.5 cm wide, entire or remotely sinuate with recurved margin and marginal glands, dull green

[48] The labels for this collector's specimens distributed from the Arnold Arboretum originally bore the collectors name erroneously as T. S. Tsoong.

above, paler beneath, not at all or obscurely punctate or sometimes more distinctly so beneath margin, generally minutely lepidote, glabrous, the midrib prominent beneath, the lateral nerves about 18 pairs, raised beneath, very obscure above, the marginal nerve more or less prominent, close to often reflexed edge; inflorescences compound-corymbose-umbellate, glabrous, on curved ends of special lateral flowering branches, these rather slender, 8 to 24 cm long, bearing a few leaves on upper ¼, the primary rays 2 to 2.5 cm long, the pedicels 1 to 2 cm long; flowers white, tinged purplish, 6 to 7 mm long; sepals shortly united at base, ovate, obtuse or rounded, 2 mm long or less, punctate or obscurely so, glabrous; petals ovate, acute, punctate, densely papillose within near base; stamens slightly longer than petals, the anthers sagittate-lanceolate with a few large punctations; pistil equaling petals; fruit 7 to 8 mm in diameter, dark reddish, obscurely punctate.

Southeastern China.

ANHWEI: *S. S. Chien 1082* (*Am*).

KIANGSI: *S. K. Lau 4839* (*A, W*).

KWANGTUNG: *C. C. C. 1341* (*G. M*), *1487* (*A*), *1534* (*A, G, M*) 7016 (*NA, Y*); *W. Y. Chun 5913* (*C*), *59347* (*A*); (*A*) *Hongkong Bot. Gard., Herb. 10881A* (*Y*)[49]; *Merrill 1116* (*C, NA, Y*); *S. S. Sin 9940* (*Y*), *11521* (*Y*), *11837* (*Y*); *W. T. Tsang 20882* (*Y*), *21250* (*A, NA, Y*).

This species is closely related to *A. crenata* Sims, from which it may be distinguished by its larger flowers and usually by the lack of raised-punctate glands on the lower surface of the leaves.

36. ARDISIA CRISPA (Thunb.) A. DC. Text fig. 21, a to d.

Bladhia crispa THUNB., Fl. Japon. (1784) 97. "Crescit in insula Nipon." The type in the herbarium of the University of Upsala has been examined by Handel-Mazzetti.(19, p. 756)

Ardisia crispa (Thunb.) A. DC., Trans. Linn. Soc. 17 (1834) 124; DC. Prodr. 8 (1844) 134. Based on *Bladhia crispa* Thunb., but misapplied by DeCandolle.

Ardisia hortorum MAXIM., Gartenflora 14 (1865) 363, *pl. 491*. Based on cultivated plants at the St. Petersburg botanical garden received from cultivation in Japan.

Ardisia Henryi HEMSL., Journ. Linn. Bot. 26 (1889) 65. Based on Kew specimens of *Henry 3455* and *3972* from Hupeh (duplicates examined in the U. S. Nat. Herb., Gray Herb., and Arnold Arboretum) and *Faber* (without number) from Mount Omei, Szechwan (a probable duplicate examined at the New York Botanical Garden, there designated as *Faber 172*).

[49] This is a rubbing, doubtfully identified.

Tinus Henryi KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia Henryi* Hemsl.

Ardisia penduliflora MEZ in Eng., Pflanzenreich 9 (IV. 236) (1902) 150. Based on Berlin specimens of *Henry 4314* and *6365*. Duplicates have been examined.

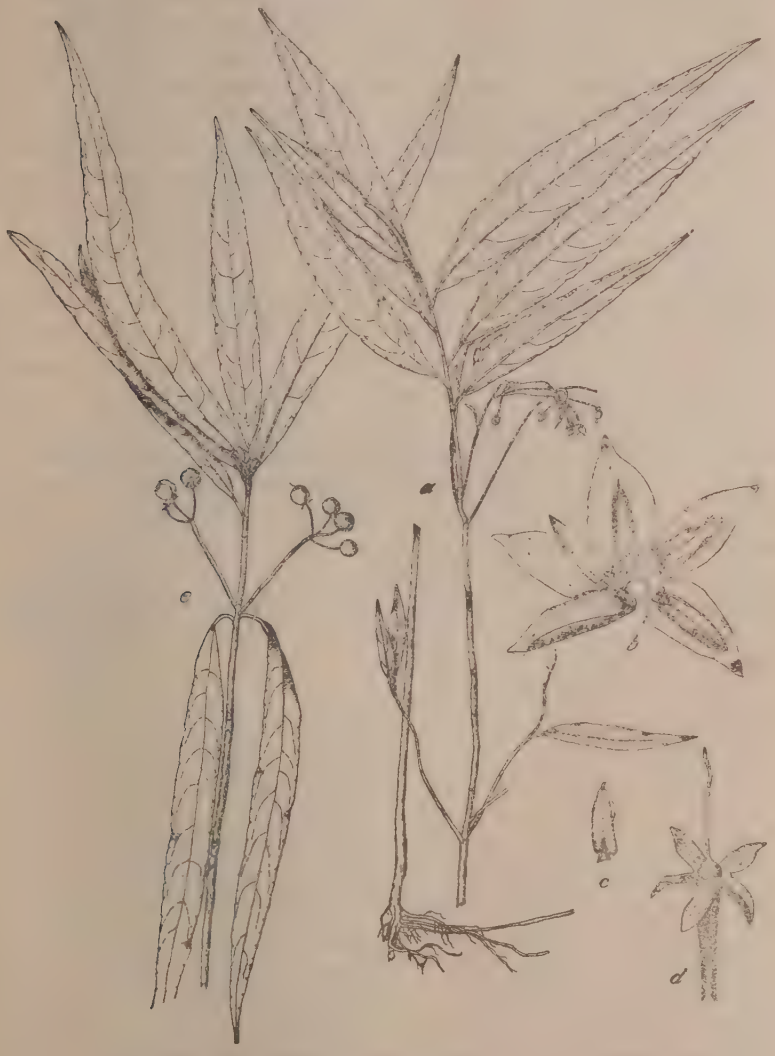

FIG. 21. *a* to *d*, *Ardisia crispa* (Thumb.) A. DC. *a*, whole plant with inflorescences, × ½; *b*, corolla and stamens, back view, × 3⅓; *c*, stamen, back view, × 3⅓; *d*, sepals and pistil, × 3⅓. *e*, *Ardisia crispa* var. *Dielsii* (Léveillé) Walker; upper part of plant with inflorescences, × ½. Part *a* drawn from *Henry 3455* (*W*); parts *b* to *d* from *Henry 6365* (*W*); part *e* from *Henry 13279* (*W*).

A shrub or undershrub up to 1.5 m high, with creeping rhizome, the erect stem rarely branched, except for the special flowering branches, slender, grayish brown, generally smooth, usually minutely puberulent or lepidote when young, noticeably elongating above insertion of special flowering branchlets after flowering; leaves petiolate (5 to 8 mm), the blade membranous, elliptic-lanceolate or narrowly oblong-lanceolate, acute at base, acute to long and slenderly acuminate at apex, 6 to 15 cm long, 1.5 to 4 cm wide, entire or wavy, finely recurved on margin, with distinct marginal glands, dark green and glabrous above, slightly paler and usually finely lepidote beneath, sometimes raised-punctate, the midrib prominent beneath, the lateral nerves about 8 pairs, fine, inconspicuous, curved-ascending, the marginal nerve very obscure or wanting; inflorescences simple, subumbellate, terminal on special lateral flowering branches, these 5 to 10 cm long, slender, glabrous or lepidote or minutely puberulent especially near hooked apex, usually in axils of lower leaves or below them, generally with a few leaves or leaflike bracts near apex, the pedicels fuscous-puberulent, up to 1.5 cm long; flowers white or pink, 4 to 5 mm long; sepals thin, oblong-ovate or lanceolate, acute or narrowly rounded, 1.5 mm long, not at all or sparingly punctate and about 3-nerved on back, glabrous; petals ovate, obtuse or acute, almost without punctate dots, minutely puberulent within; stamens nearly equaling petals, the anthers narrowly oblong-lanceolate, lobed at base, not punctate on back; pistil equaling or longer than petals; fruit 5 to 6 mm in diameter, reddish or black, somewhat punctate.

Japan to southwestern China.

JAPAN: *K. Shiota 3217* (*A*)[50] *7318* (*A*); *Wilson 6059* (*A*), *6094* (*A*).

ANHWEI: *Ching 2656* (*A*); *Wu-Han Univ., Herb. Nat. 1463* (*Y*).

HUPEH: *Henry 3455* (*A, G, W*), *3972* (*A, G, W*), *4314* (*G*), *6365* (*W*), *7747* (*A, G, M*); *Nanking, Herb. Univ. 3848* (*A*); *Wilson* (*Veitch Exped.*) *414* (*A, W*); *Wilson* (*Arn. Arb. Exped.*) *458* (*A, G, W, Y*); *Wu-Han Univ., Herb. Nat. 631* (*A, Y*).

HUNAN: *S. C. Fan & Y. Y. Li 216* (*A*), *629* (*A*); *Handel-Mazzetti 12128* (*V*).

KIANGSI: *Gressitt 1515* (*A*); *Wu-Han Univ., Herb. Nat. 303* (*A*), *495* (*A*).

[50] This specimen has unusually large leaves, possibly representing a cultivated form.

KWANGSI: *Ching 6974?* (*W*); *W. T. Tsang 27712* (*A*); *C. Wang 39443* (*A, W*).

KWEICHOW: *S. W. Teng 90419* (*A*)*?*; *Y. Tsiang 7516* (*A, W*).

SZECHWAN: *Faber 172* (*Y*); *W. P. Fang 3902* (*W*); *Liu Yu-shih 2014* (*A*); *F. T. Wang 23133A* (*A, W*); *Wilson* (*Veitch Exped.*) *4056, in part* (*A*), *5062* (*A*).

This species may be distinguished by its slender, smooth stems, minutely puberulent when young, and by its conspicuous habit of continuing its growth above the insertion of the flowering branches. It must be specially noted that this name has usually been applied erroneously to the species called *A. crenata* in this revision (*see* p. 112).

FIG. 22. *Ardisia crispa* var. *amplifolia* Walker var. nov. *a*, branchlet with fruiting inflorescences, × ⅔; *b*, fruit, × 3⅔. Drawn from a type collection, *Henry 9653* (*A*).

36a. ARDISIA CRISPA var. AMPLIFOLIA Walker. Text fig. 22.

Ardisia crispa var. *amplifolia* WALKER, Journ. Washington Acad. Sci. 29 (1939) 259. Based on *Henry 9653* from Mengtze, Yunnan, in the United States National Herbarium.

Differs from the typical form of the species in its thicker, rough stems, larger and broader leaves (24 cm long, 5.5 cm wide) with about twice as many lateral nerves.

YUNNAN: *Henry 9653* (*A, W, Y*), *9653A* (*Y*), *9653B* (*Y*); *H. T. Tsai 51731* (*A, W*), *52512* (*A, Fa*).

36b. ARDISIA CRISPA var. DIELSII Léveillé, Walker. Text fig. 21, e.

Ardisia Dielsii LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 461. Based on *Bodinier* (*L. Martin*) *1636* (erroneously cited as *L. Martin*

1636), collected June 1, 1898, in rocky woods on the college hill at Kouy-Yang, Kweichow, deposited in the Léveillé herbarium; the type has been examined.

Ardisia Henryi var. *Dielsii* WALKER, Journ. Arn. Arb. 15 (1934) 290. Based on *Ardisia Dielsii* Léveillé. Handel-Mazzetti[19, p. 756] does not recognize this variety.

Ardisia hortorum var. *brachysepala* HAND.-MAZZ., Symb. Sin. pt. 71 (1936) 756. Based on *Handel-Mazzetti 10716*, collected in a bamboo thicket on a limestone hill at Dodjie between Badschai and Duyün, Kweichow, altitude 700 m, July 13, 1917. The type has been examined.

Ardisia crispa var. *Dielsii* WALKER, Journ. Washington Acad. Sci. 29 (1939) 260. Based on *Ardisia Dielsii* Léveillé.

Differs from the typical form of the species in its longer and slenderer leaves, these narrowly long-lanceolate, 12 to 20 cm long, 1 to 4 cm wide, the lateral nerves very clearly curved-ascending.

Southern and central China.

KWANGSI: *Z. S. Chung 83337* (*A*); *W. T. Tsang 22917* (*A, W*); *C. Wang 39358* (*W*), *40565* (*A*).

KWEICHOW: *Bodinier 1636* (*A, E*); *Handel-Mazzetti 10716* (*V*); *Steward, Chiao, & Cheo 463* (*A, Y*); *S. W. Teng 586* (*Su*); *Y. Tsiang 4429* (*W*), *5535* (*W*), *7761* (*W*), *8813* (*Y*).

SZECHWAN: *Liu Yu-shih 2013* (*A*); *Wilson 1980* (*A, W*).

YUNNAN: *Henry 13279* (*W*), *13407* (*Y*).

37. ARDISIA MACULOSA Mez.

Ardisia maculosa MEZ in Engl., Pflazenreich 9 (IV. 236) (1902) 146. Based on *Henry 12088D* and *12088E* from Yunnan, in the Berlin herbarium. Duplicates have been examined.

Ardisia patens MEZ, op. cit. 149. Based on *Henry 12088B* from Yunnan in the Berlin herbarium. Duplicates have been examined.

A shrub 1 to 2.5 m high, the main stem brownish, glabrous, probably unbranched except for the special flowering branches; leaves with narrowly winged or channeled petiole (up to 1 cm), the blade chartaceous, elliptic or oblong-lanceolate, rarely oblanceolate, acute at base, usually acuminate at apex, sometimes acute, 10 to 18 cm long, 3 to 4.5 cm wide, scalloped-crenate at marginal glands, not punctate, sometimes minutely lepidote and scarcely paler beneath, glabrous, the midrib prominent, the lateral nerves about 15 pairs, the marginal nerve not prominent; inflorescences compound-corymbose-umbellate, terminal on special lateral branches, these up to 40 cm long, bearing several scattered leaves mostly on upper $\frac{2}{3}$, slender, green, minutely puberulent, glabrescent, the primary rays 1 to 3 cm long, the pedicels about 1 cm long in flower, somewhat longer in fruit; flowers

pink, 5 mm long; sepals almost free, 2.5 to 3 mm long, ovate or oblong or elliptic-ovate, generally narrower at base, acute to subrounded, thin especially on margin, only rarely punctate, glabrous; petals ovate, acute, not punctate, minutely puberulent within near base; stamens shorter than petals, the anthers lanceolate, acute, not punctate on back; pistil shorter than petals; fruit 8 to 9 mm in diameter, reddish or blackish, not punctate.

KWANGSI: *H. Y. Liang 69756* (*A*).

YUNNAN: *Henry 10832* (*A, Y*), *11754* (*A*), *12088* (*A, M*), *12088A* (*W*), *12088B* (*A, M, Y*), *12088D* (*A*), *12088E* (*A, M, W, Y*), *13578* (*W*); *Rock 2393* (*A, C, W*); *H. T. Tsai 51926* (*A, W*), *53084* (*A, W*), *54723* (*A, W*), *55323* (*A, W*), *60138* (*A, W*), *60185* (*A, W*), *60264* (*A, W*), *60528* (*A, W*); *C. W. Wang 73650* (*A, W*), *75227* (*A, W*), *76603* (*Fa*), *78134* (*A, W*).

This species lacks punctations almost throughout and has larger fruits (8 to 9 mm) than has any other species here described. However, the duplicate of the type of *A. patens* Mez has sepals with a few punctate glands.

38. ARDISIA SHWELIENSIS W. W. Smith.

Ardisia Shweliensis W. W. SMITH, Notes Bot. Gard. Edinburgh 12 (1920) 194. Based on *Forrest 7934* in the Edinburgh herbarium. A duplicate has been examined.

A shrub 1 to 2 m high, glabrous throughout, the branchlets grayish, smooth; leaves petiolate (1 to 1.5 cm), the blade membranous, elliptic-ovate or lanceolate, acute at base, acuminate or abruptly so at apex, about 14 cm long, 5 cm wide, entire or undulate-crisped with marginal glands almost equally green on both sides, densely spotted with small black-punctate glands, these mostly elongate, especially prominent beneath, glabrous, the midrib prominently raised beneath, the lateral nerves about 15 pairs, fine, raised beneath, uniting in an inconspicuous and irregular fine nerve close to margin, the veinlets reticulate; inflorescence cymose, about 8-flowered, glabrous, terminal on special lateral flowering branches, these 6 to 14 cm long, bearing about 2 reduced leaves near apex, the pedicels 1 cm long, thick, clavate; flowers white, spotted dull "lake-crimson", 7 mm long; sepals almost free, elliptic-ovate, broadly obtuse or rounded, 2.5 mm long, distinctly black-punctate, glabrous; petals ovate, acute, punctate; stamens nearly $\frac{3}{4}$ length of petals, the anthers lanceolate, acute, shortly apiculate, not punctate on back; pistil equaling petals; fruit unknown.

YUNNAN: *Forrest 7934* (*A*).

This species is readily distinguished by its thick pedicels and by the densely black-punctate glands on the leaves and on the elliptic-ovate, broadly obtuse or rounded sepals. The backs of the anthers noticeably lack punctate glands.

39. ARDISIA ENSIFOLIA Walker sp. nov. Text fig. 23.

Frutex humilis circa 30 cm altus, caulibus erectis gracilibus junioribus fuscis aetate canescentibus et rugosis praeter ramulos floriferos non ramosis, cicatribus foliorum perspicuis; folia chartacea vel coriacea, 10 ad 15 cm longa, 1 cm lata, anguste lanceolata vel linearia, apice graciliter acuta, margine reflexa et glandulis praedita, subtus punctata, nervibus lateralibus non manifestis, moderate numerosis, rectis, in nervulum marginalem inconspicuum confluentibus; inflorescentiae simplices, subumbellatae, in apicibus uncis ramulorum specialium floriferorum 7 cm longorum, sine foliis reductis; flores circa 12 mm diametro, pedicellis lepidotis, 1 ad 2 cm longis; sepala 3 ad 4 mm longa, late ovata, obtusa vel rotundata ante anthesin nonnumquam dextrorse imbricata, per anthesin non imbricata, valde punctata; petala 5 ad 6 mm longa, oblongo-ovata, atropunctata, stamina petalis fere aequalia, antheris subsessilibus, dorso non vel sparse punctatis; pistillum petalis aequale vel paulo longius; fructus immaturus, atropunctatus.

An undershrub about 30 cm high with thick, woody, elongate rhizome, the erect stems rather slender, brownish when young, becoming grayish and wrinkled, unbranched except for special flowering branches, the leaf scars rather prominent; leaves with channeled petiole (3 to 8 mm), the blade chartaceous or coriaceous, narrowly lanceolate to linear, acute at base, slenderly tapering-acute at apex, 10 to 15 cm long, 1 cm wide, entire, with reflexed margin and marginal glands, dark green above, slightly paler and punctate beneath, the midrib conspicuous above, raised beneath, the lateral nerves inconspicuous, rather numerous, straight, uniting in a more or less inconspicuous marginal nerve; inflorescences simple, subumbellate, on curved ends of special lateral flowering branches, these 7 cm long, without reduced leaves (or these fallen in specimen seen), the bracts ovate to oblong, obtuse, punctate, about 2 mm long, the pedicels lepidote, 1 to 2 cm long; flowers red, about 12 mm in diameter when open; sepals shortly united at base, sometimes dextrorsely overlapping in bud but not in opened flowers, broadly ovate, obtuse, 3 to 4 mm long, half as wide, densely black-punctate, glabrous; petals 5 to 6 mm long, oblong-ovate, abundantly black-punctate, not papil-

FIG. 23. *Ardisia ensifolia* Walker sp. nov. *a*, upper part of plant with inflorescences, × ½; *b*, sepals and pistil, × 5; *c*, stamens, back view, × 5; *d*, petal and stamen, × 5. Drawn from the type, *S. K. Lau 28493* (*W*).

lose within; stamens nearly equaling petals, the anthers oblong, acute, apiculate, not all or sparingly punctate on back; pistil equaling or slightly exceeding petals; fruit immature, black-punctate.

Type in the United States National Herbarium, *no. 1751555*, collected by *S. K. Lau, no. 28493* in a rocky place in light woods, Ling Wan District, Kwangsi, July 9, 1937, for Sun Yatsen University; duplicate at the Arnold Arboretum.

This species is readily distinguished by its very narrowly lanceolate to linear or ensiform leaves and by the broadly ovate and densely black-punctate sepals.

FIG. 24. *Ardisia filiformis* Walker. *a*, branchlet with inflorescences, × ⅔; *b*, fruit, × 3½. Part *a* drawn from *W. T. Tsang 22393* (*A*); part *b* from the type, Ching *8000* (*W*).

40. ARDISIA FILIFORMIS Walker. Text fig. 24.

Ardisia filiformis WALKER, Journ. Washington Acad. Sci. 27 (1937) 198, *fig. 2.* Based on *R. C. Ching 8000* from Seh-feng Dar Shan, S. Nanning, Kwangsi, in the United States National Herbarium.

A shrub 1 m high, the stems and few branches very slender, glabrous, dark grayish brown; leaves short-petiolate (about 3 mm), the blade membranous, slenderly lanceolate, acute at base, slenderly tapering-acute at apex, 12 to 19 cm long, 1 to 2.5 cm

wide, entire or shallowy undulate with teeth bearing very small glands terminating veinlets arising from marginal nerves, dull green above, paler and more or less finely lepidote beneath, not 10 to 12 pairs, fine, rather inconspicuous above, raised beneath, curved-ascending, uniting in a distinct marginal nerve; inflorescences paniculate, axillary, 4 to 6 cm long, glabrous, the peduncle (about 2.5 cm) and pedicels (8 mm) very slender; flowers about 3 to 4 mm long, the color unknown; sepals shortly united at base, ovate, obtuse to subrounded at apex, 1 mm long, entire, minutely punctate, glabrous; petals oblong-ovate, obtuse or rounded, finely punctate; stamens shorter than petals, the anthers broadly ovate, not punctate on back; pistil equaling petals, the ovary obscurely punctate; fruit about 6 mm in diameter, reddish, distinctly punctate.

KWANGSI: *R. C. Ching 8000* (*W, Y*); *S. P. Ko 55353* (*A, W*); *W. H. Soo 68156* (*W*); *W. T. Tsang 22393* (*A*), *22567* (*A, W*), *24302* (*A, W*), *24782* (*A, W*).

This species is distinct in its slender branchlets, in its paniculate inflorescences with almost filamentous peduncles and pedicels, and in its slenderly lanceolate, long-acute, membranous leaves. The marginal glands terminating the veinlets arising from the marginal nerve are very small or almost wanting, especially in entire leaves. The position of this species in § *Crispardisia* is thus uncertain.

41. ARDISIA OLIVACEA Walker sp. nov. Text fig. 25.

Frutex 1 m altus, caulibus praeter ramulos speciales floriferos non ramosis; folia membranacea, 13 ad 24 cm longa, 4 to 7 cm lata, oblanceolata vel oblongo-lanceolata, apice acuta vel acuminata, margine plana, glabra, supra obscure olivacea, subtus obscure punctata, punctulis parvis, numerosis, venulis obscurissimis, nonnulis in glandulis obscuris terminantibus; inflorescentiae simplices, subumbellatae, pauciflorae, in apicibus ramulorum lateralium gracilium specialium floriferorum 5 ad 8 cm longorum, non foliaceorum, lepidotorum vel minutissime puberulorum; flores ignoti; sepala fructu late ovata, obtusa vel acuta, circa 1 mm longa, non imbricata, obscure punctata, glandulis non atris; fructus 6 mm diametro, non punctatus.

A shrub 1 m high, the erect stems grayish brown, glabrous, smooth, unbranched except for the special flowering branches; leaves with channeled petiole (1 to 2 cm), the blade membranous, oblanceolate or oblong-lanceolate, tapering to an acute base, obtuse or acute and somewhat acuminate at apex, 13 to 24 cm long, 4 to 7 cm wide, entire, with marginal glands, dull olive-

FIG. 25. *Ardisia olivacea* Walker sp. nov. *a*, branchlet with fruiting inflorescences, × ½; *b*, fruit, × 5. Drawn from the type, *S. P. Ko 56023 (W)*.

cm wide, entire, with marginal glands, dull olive-green above, paler and obscurely punctate beneath with numerous small, scarcely raised, glandular dots, the midrib prominently raised beneath, the lateral veins 10 to 12 pairs, curved-ascending, not uniting in a definite marginal nerve, the veinlets very obscure, some ending in more or less inconspicuous resinous marginal glands; inflorescences simple, subumbellate, few-flowered, on curved ends of special, slender, lateral, flowering branches, these 5 to 8 cm long, without leaves or leaflike bracts, lepidote or very minutely puberulent, the pedicels slender, 1.5 cm long, lepidote or puberulent, the flowers unknown; sepals in fruit apparently not overlapping, broadly ovate, obtuse or acute, about 1 mm long, obscurely punctate, the glands not black, glabrous; fruit 6 mm in diameter, reddish, not punctate.

Type in the United States National Herbarium, *no. 1717766*, collected by *S. P. Ko, no. 56023*, in woods in Chan Pien District, Kwangsi, November 13, 1935, for Sun Yatsen University; duplicate at the Arnold Arboretum.

This species most nearly resembles *Ardisia crispa* var. *amplifolia* Walker, but may be recognized by the less thickened stems, the membranous and broader leaves with somewhat fewer lateral nerves, the very slender lateral flowering branches without leaves or leaflike bracts, and the broader sepals obscurely punctate with reddish and obscure glands.

Section Bladhia (Thunb.) Mez

Suffrutescent undershrubs usually with creeping rhizomes, the erect stems unbranched; leaves usually serrate, rarely entire (*A. chinensis* and *A. triflora*) without albuminous marginal glands; inflorescences axillary, never on special leaf-bearing branches; sepals never imbricate, acute or obtuse.

42. ARDISIA CHINENSIS Benth.

Ardisia chinensis Benth., Fl. Hongk. (1861) 207. Based on a collection by Champion from a ravine on Mount Victoria, Hongkong, in the Kew herbarium. A photograph of the type has been examined.

Bladhia chinensis Nakai, Bot. Mag. Tokyo 35 (1921) (98). Based on *Ardisia chinensis* Benth.

A decumbent, radicant, suffrutescent undershrub, the ascending branches up to 45 cm high, minutely puberulent or fuscous-lepidote when young, glabrescent; the leaves alternate, petiolate (about 5 mm), the blade chartaceous, obovate or elliptic, cuneate at base, obtuse or shortly and obtusely acuminate at apex, 3 to 6

cm long, 1.5 to 2.5 cm wide, generally entire, sometimes undulate above middle, somewhat revolute on margin when dry, dull green, glabrous above, more or less lepidote beneath, the midrib prominent and raised beneath, the lateral nerves numerous, fine, uniting in a marginal nerve; inflorescences axillary, simple, subumbellate, few-flowered, the peduncles and pedicels slender, each about 1 cm long, more or less fuscous-lepidote; flowers white, 3 mm long; sepals united about $\frac{1}{3}$ their length or less, triangular-ovate, acute, under 1 mm long, not punctate, the margin sometimes ciliate; petals free or nearly so, ovate, acute or acuminate, glabrous, not punctate; stamens about $\frac{2}{3}$ length of petals, the anthers ovate, sagittate at base, acute with apiculate apex, obscurely punctate on back; pistil about equaling petals; fruit about 5 mm in diameter, brownish, not punctate, somewhat longitudinally striate, glabrous.

Southeastern China and Formosa.

FORMOSA: *Ford 51 (G); Formosa, Herb. Gov't. 222 (C).*

KIANGSI: *S. K. Lau 4070 (A, W), 4824 (A, W).*

CHEKIANG: *Ching 2003 (A, W).*

FUKIEN: *H. H. Chung 2981 (A, Am, C); Gressitt 1702 (A).*

HONGKONG: *Champion (A, W,*[51] *Y).*[52]

KWANGTUNG: *C. C. C. 6589 (NA), 12664 (C, NA, W), 14357 (C, NA); S. K. Lau 971 (A, Y); 1999 (A); S. S. Sin 9118 (Y); Y. W. Taam 274 (A); W. T. Tsang 25289 (A).*

KWANGSI: *Steward & Cheo 934 (A, Y); W. T. Tsang 22062 (A, W), 23864 (A), 24184 (A); C. Wang 39389 (A, W); Y. C. Wang 5329 (Su).*

This species is recognized by its alternate, glabrous, small leaves (under 6 cm long).

43. **ARDISIA TRIFLORA** Hemsl. Text fig. 26.

Ardisia triflora HEMSL.,[53] Journ. Linn. Soc. Bot. 26 (1889) 67. Based on *Ford 107* from Kwangtung in the Kew herbarium. A photograph of the type has been examined.

Tinus triflora KUNTZE, Rev. Gen. Pl. 2 (1891) 975. Based on *Ardisia triflora* Hemsl.

A decumbent, radicant, suffrutescent undershrub, the erect stems about 15 cm high, grayish green to silvery gray, glabrous or ferruginous-lepidote when young; leaves alternate, petiolate

[51] Photograph in United States National Herbarium of the type in the Kew Herbarium.

[52] A rubbing from the type specimen at Kew.

[53] Erroneously listed as *Ardisia tuflora* Hemsl. in Index Kewensis, Suppl. 1 (1901–1906) 36.

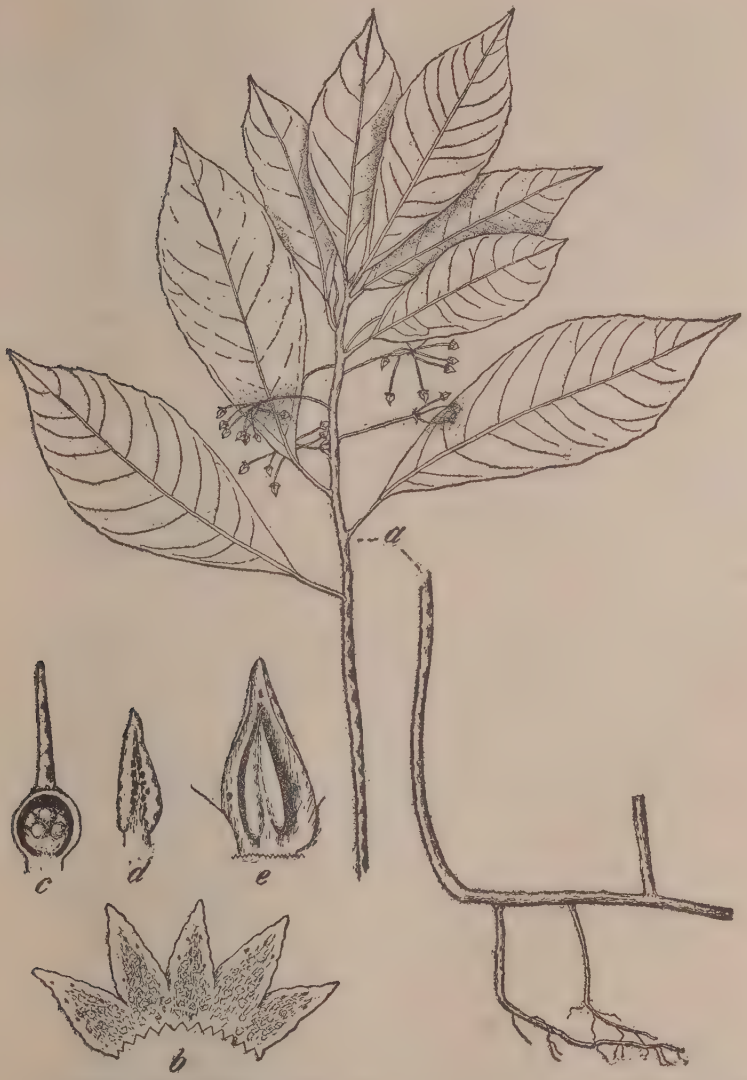

FIG. 26. *Ardisia triflora* Hemsl. *a*, whole, plant, × ½; *b*, calyx, × 10; *c*, pistil with partially dissected ovary, × 10; *d*, stamen, back view, × 10; *e*, petal and stamen, × 10. Drawn from *W. Y. Chun 6274 (A)*.

(up to 8 mm), the blade membranous, obovate or elliptic-ovate, broadly acute or subacuminate at apex, cuneate at base, 7 to 12 cm long, 3 to 4.5 cm wide, entire or slightly undulate, dull green above, slightly paler and somewhat lepidote beneath, the midrib prominent beneath, lateral nerves about 12 pairs, very fine, not

prominent, not uniting in a distinct marginal nerve, the veinlets finely reticulate; inflorescences axillary, subumbellate, many-flowered (about 12), 4 cm long, ferruginous-lepidote throughout at least when young, the peduncles very slender, 3 cm long, the pedicels slender, about 1 cm long; flowers white, 3 mm long; sepals shortly united at base, the lobes scarcely overlapping, triangular-ovate, acute, scarcely 2 mm long, entire or slightly irregular on margin, subherbaceous at apex, very obscurely punctate, ferruginous-lepidote at base; petals ovate, acute, nearly 3 mm long, glabrous, sparingly punctate; stamens about $\frac{3}{4}$ length of petals, the anthers lanceolate, sharply acute to acuminate, not punctate on back; pistil equaling petals; fruit ovoid, 5 to 7 mm in diameter, not punctate, glabrous.

KWANGTUNG: *W. Y. Chun 6271* (*A, C*); *Ford 107* (photograph, *A, Y*); *T. N. Liou 7584* (*Y*).

This apparently rare species is recognized by its almost entire, slightly undulate, alternate leaves, 7 cm long or longer, its grayish-green to silvery-gray stems, and its slender peduncles and pedicels.

44. ARDISIA PUSILLA A. DC.

Bladhia villosa THUNB., Fl. Japon. (1874) 96, *pl. 19*. Originally described from Nagasaki, Japan. The type, probably in the Thunbergian herbarium in Upsala, Sweden, has not been examined.

Ardisia pusilla A. DC., Trans Linn. Soc. 17 (1834) 126; Prodr. 8 (1844) 137. Based on *Bladhia villosa* Thunb. Thunberg's specific name could not be used because of *Ardisia villosa* Roxb. (1824).

Ardisia villosa MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 152. Based on *Bladhia villosa* Thunb.

Ardisia reptans MERR., Philip. Journ. Sci. § C 5 (1910) 220. Based on *Foxworthy 1933* from Luzon, in the herbarium of the Bureau of Science, Manila. A duplicate in the United States National Herbarium has been examined.

Ardisia reptans MEZ, Repert. Sp. Nov. Fedde 16 (1920) 415. Based on the same collection as the preceding.

A decumbent, radicant, suffrutescent undershrub with ascending branches less than 30 cm high, the stem very slender, densely fuscous-villose with long, crisped hairs when young, glabrescent; leaves opposite or subverticillate, petiolate (about 5 mm), the blade elliptic-ovate or obovate, rounded or broadly acute at base, acute or obtuse at apex, 2.5 to 5.5 cm long, 1.5 to 2.5 cm wide, prominently and somewhat distantly serrate or denticulate, minutely scattered-punctate, generally glabrous above, paler and fuscous-pubescent beneath with long, crisped hairs, especially on prominent raised midrib, the lateral nerves about 7 pairs, promi-

nent, scarcely uniting before reaching margin, the veinlets reticulate; inflorescences axillary, umbellate, few-flowered, fuscous-pubescent or hirsute with crisped hairs, the peduncles 1 to 2 cm long, the pedicels very slender, about 6 mm long; flowers purple [*ex C. C. C. 12158*], 3 to 4 mm long; sepals shortly united at base, lanceolate-subulate, slender-acuminate, nearly equaling petals, pilose with long, crisped hairs, not punctate; petals ovate, acute, not punctate; stamens nearly equaling petals, the anthers ovate, sagittate at base, acute and somewhat apiculate at apex, punctate on back; pistil equaling petals; fruit about 5 mm in diameter, reddish, black-punctate, glabrous.

Eastern Asia from Japan and Korea to southern China and the Philippines.

JAPAN: *Faurie 2554* (*V*); *Matsumura*, Tokyo, July 22, 1879 (*W*); *Oldham*, Nagasaki 1862 (*G, Y*); *K. Shiota Herb. 3221* (*A*), *5365* (*A*); *K. Watanabe*, Ochi, Tosa, February 19, 1883 (*G*); *Wilson 6048* (*A, W*).

KOREA, Quelpart Island: *Faurie 1897* (*A*); *Taquet 1093* (*A, C*), *4470* (*A*); *Wilson 9545* (*A*).

HUNAN: *Handel-Mazzetti 11470* (*V*).

FUKIEN: *H. H. Chung 909* (*C*), *939* (*Am, C*), *2312* (*Am, C*) *7595* (*A*); *Hongkong Bot. Gard., Herb. 2895* (*A*).

KWANGTUNG: *C. C. C. 2665* (*NA, W*), *12158* (*NA, W, Y*); *S. K. Lau 911* (*A, Y*), *927* (*A, Y*); *Mell 646* (*V*), *714* (*V*); *S. S. Sin 11900* (*Y*).

KWANGSI: *W. T. Tsang 23366* (*A, W*); *C. Wang 40693* (*A*).

This species is easily recognized by its opposite or subverticillate leaves about 3.5 cm long, these pubescent beneath with crisped hairs.

45. ARDISIA FABERI Hemsl.

Ardisia Faberi HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 64. Based on *Henry 3304* from Hupeh and *Faber 795* from Mount Omei, Szechwan, both in the Kew herbarium. Duplicates have been examined.

Tinus Faberi KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia Faberi* Hemsl.

Ardisia castaneifolia LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 461. Based on *J. Cavaleriei 751* from Kweichow. A duplicate has been examined.

Ardisia Cavaleriei LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 374. Based on *A. castaneifolia* Léveillé.

A decumbent, radicant, suffrustescent undershrub, the ascending branches 15 to 30 cm long, fuscous-villose with long, crisped hairs; leaves opposite or subverticillate, the petiole about 1 cm

long, hirsute, the blade thick-membranous or chartaceous, elliptic-ovate, about equally acute at both ends or sometimes slightly acuminate at apex, 6 to 8 cm long, 2.5 to 4 cm wide, sometimes up to 10 cm long, 4.5 cm wide, rather coarsely serrate, not punctate, strigillose or hirsute with soft, crisped hairs on both sides especially on midrib and veins beneath, the lateral nerves 5 to 9 pairs, curved-ascending, not uniting in a marginal nerve, the veinlets raised-reticulate; inflorescences in axils of verticillate leaves or of alternately arranged subulate bracts (3 to 8 cm) on internodes, subumbellate, few-flowered, hirsute, the peduncles slender, about 1.5 cm long; pedicels slender, about 7 mm long; flowers white or red, 5 to 6 mm long; sepals shortly united at base, narrow- or linear-lanceolate, slender-acute, 4 to 5 mm long, hirsute; petals broadly ovate, acute or obtuse, sparingly or not at all reddish-punctate; stamens about $\frac{2}{3}$ length of petals, the anthers ovate, apiculate, not punctate on back; pistil about equaling petals; fruit up to 6 mm in diameter, reddish, not punctate, puberulent.

Hupeh to Yunnan.

HUPEH: *Faber 98* (*W*); *Henry 3304* (*W, Y*), *6237* (*A, G, Y*); *Wilson* (*Veitch Exped.*) *1992* (*Y*); *Wu-han Univ., Herb. Nat. 687* (*A, Y*).

KWANGTUNG: *C. C. C. 19698* (*Y*).

KWANGSI: *Ching 5634* (*W, Y*); *W. T. Tsang 27713* (*A*).

KWEICHOW: *Cavalerie* [*751*] (*A*),[54] *1899* (*E*);[55] *S. W. Teng 90569* (*A, W*).

SZECHWAN: *Faber 795* (*Y*); *W. P. Fang 1246* (*A*), *5754* (*A*).

YUNNAN: *Henry 11338 in part* (*Y*); *H. T. Tsai 51763* (*A*).

This species closely resembles *A. pusilla* A. DC., differing principally in the generally more robust appearance, the larger leaves with more narrowly acute bases, and acute to slightly acuminate apices, the more coarsely serrate leaf margins, and the larger flowers and fruits.

46. ARDISIA JAPONICA (Hornsted) Blume.

Bladhia japonica HORNSTED in Thunb., Nov. Gen. Pl. (1781) 6; THUNB., Fl. Japon. (1874) 95, *pl. 18*. The type, probably in the Thunbergian herbarium in Upsala, Sweden, has not been seen.

[54] This specimen consists of a photograph and fragment without collector's number, but identified by Prof. Rehder as from the type of *A. castaneifolia* Léveillé, *Cavalerie 751* in the Léveillé herbarium (later changed to *A. Cavaleriei* Léveillé).

[55] This specimen is cited by Léveillé in his transfer of *A. castaneifolia* to *A. Cavaleriei*.

Thunberg is usually given as the authority for this name, but as the dissertation in which the name was first used was the work of Hornsted, one of Thunberg's pupils, he should be given as the authority. Furthermore, Thunberg recognized Hornsted as the author of this name. The error was apparently first made by C. L. Blume,[3] who cites both Thunberg's Flora Japonica 1784, and "Hornst. Dissert, pars 1. pag. 6, 7, c. ic," 1781.

Ardisia japonica BLUME, Bijdr. Fl. Nederl. Ind. (1825) 690. Based on *Bladhia japonica* Hornsted (erroneously attributed to Thunberg; *see* above).

Ardisia odontophylla WALL., (Wall. List no. 2279 (1830); Trans. Linn. Soc. 17 *pl. 6.* (1837) 125; misapplied by Lindley in Bot. Reg. 22 (1836) *pl. 1892.* Dr. E. D. Merrill has discussed this misapplication.[38, p. 133]

Tinus japonica KUNZTE, Rev. Gen. Pl. 2 (1891) 405. Based on *Bladhia japonica* Hornsted (erroneously attributed to Thunberg).

A decumbent, radicant, suffrutescent undershrub with slender branches up to 30 cm (rarely 40 cm) long, minutely puberulent when young, becoming glabrous; leaves opposite or subverticillate, the petiole 6 to 10 mm long, minutely puberulent, the blade chartaceous or coriaceous, elliptic-ovate to broadly eliptic-lanceolate, almost equally acute at both ends, about 5 cm long, 2 cm wide, ranging from 3.5 to 8 cm long, 1.5 to 3.5 cm wide, finely serrate, more or less punctate, glabrous or sometimes minutely puberulent on the prominent midrib beneath, the lateral nerves about 5 pairs, the veinlets prominently reticulate; inflorescences axillary or subterminal, subumbellate, few-flowered, puberulent, the peduncle about 5 mm long, slender, pedicels about 7 mm long, sometimes longer, sometimes shorter than peduncles, the bracts lanceolate, about 1 mm long, puberulent or ciliate; flowers rarely 6-merous, pink or white, about 3 mm long (up to 5 mm in some Yunnan specimens); sepals united about $\frac{1}{3}$ their length, ovate, obtuse or acute, 1.5 mm long, ciliate, sometimes punctate, glabrous; petals broadly ovate, acute, about 3 mm long (up to 5 mm in specimens from Yunnan), abundantly black-punctate; stamens about equaling petals, the anthers ovate, sagittate at base, slenderly acute at apex, punctate on back; pistil about equaling petals; fruit 5 to 6 mm in diameter, reddish or blackish, more or less punctate, glabrous.

Eastern Asia from Japan to Yunnan.

JAPAN: *Ahlberg 26* (*A*); *Dorsett & Morse 796* (*W*); *Faurie 115* (*A*), *3496* (*V*), *4158* (*A*); *J. C. Jack,* August 27, 1905 (*G*); *Kuntze 3300* (*?*); *Kyushu Imp. Univ., Herb. 1630* (*W*); *Oldham 553* (*G*); *Savatier 801* (*W*); *K. Shiota Herb. 3219* (*A*), *4536* (*A*), *5794* (*A*), *8892* (*A*); *Wilson 6178* (*A*), *7054* (*A*), *7816* (*A*).

KOREA, Quelpart Island: *Faurie 1898* (*A*); *Taquet 1094* (*A, C*), *2976* (*A*), *2977* (*A*); *Wilson 9536* (*A*), *9556* (*A*); Dagelet Island: *Wilson 8546* (*A*); Tsusima, in Strait of Korea: *Wilford in 1859* (*G*).

KIANGSU: *C. Y. Luh 1071* (*Su*); *Nanking, Herb., Univ. 612* (*C, M, Y*), *12531* (*C?*).

ANHWEI: *C. S. Fan & Y. Y. Li 36* (*A*); *K. K. Tsoong D1133* (*A?*).

HUPEH: *Faber 649* (*W*), *650* (*W*); *Henry 2275* (*W*), *7683* (*A*); *Nanking, Herb. Univ. 3621* (*A*), *3964* (*W*), *4272* (*A*); *Wilson* (*Veitch Exped.*) *2430* (*W, Y*); *Wilson* (*Arn. Arb. Exped.*) *670* (*A, G, W, Y*); *Wu-Han Univ., Herb. Nat. 719* (*A, Y*), *1752* (*A, Y*), *1884* (*A, Y*).

HUNAN: *C. S. Fan & Y. Y. Li 67* (*A*), *630* (*A*); *Handel-Mazzetti 11399* (*V, W*), *11477* (*V*); *W. T. Tsang 23566* (*A, W*).

CHEKIANG: *Barchet 469* (*W*); *Ching 3727* (*C*); *F. N. Meyer 1466* (*NA*); *Nanking, Herb. Univ. 2382* (*A*), *2898* (*C, W*), *3621* (*A*), *3964* (*W*), *4272* (*A*), *4703* (*C, W*), *14441* (*C*).

FUKIEN: *H. H. Chung 6656* (*A, Y*).

KIANGSI: *H. H. Hu 828* (*A*); *Y. Tsiang 9824* (*Y*); *Wu-Han Univ., Herb. Nat. 415* (*A*).

KWANGTUNG: *C. C. C. 3378* (*NA*); *W. Y. Chun 5750* (*A*); *T. M. Tsui 492* (*A, Y*).

KWANGSI: *W. T. Tsang 28006* (*A*).

KWEICHOW: *Handel-Mazzetti 10517* (*V*); *Steward, Chiao, & Cheo 426* (*Y*); *Y. Tsiang 5513* (*A, W, Y*), *7508* (*W*), *7515* (*A, W*), *8478* (*W*).

SZECHWAN: *W. P. Fang 2045* (*A*), *2090* (*A*), *2151* (*A*), *3467* (*A*); *Wilson* (*Veitch Exped.*) *5063* (*A*).

YUNNAN: *Henry 11338, in part* (*Y*).

This species may be recognized by its opposite or subverticillate, glabrous leaves with prominently reticulate veinlets.

Japanese botanists have described a number of varieties of this species, in addition to the following, principally from cultivated material, but, since no specimens are available, they are omitted from this revision. *See* also discussion of *Ardisia japonica* var. *montana* (Sieb.) Miquel under Uncertain Species, p. 148.

46a. ARDISIA JAPONICA var. ANGUSTA (Nakai) Makino & Nemoto.

Bladhia japonica var. *angusta* NAKAI, Trees & Shrubs Indig. Jap. 1 (1922) 203, *fig. 106* (description in Japanese)[56]; Bot. Mag. Tokyo

[56] The description of this variety in the second edition (1927) is exactly the same as in the first edition.

38 (1924) 41 (description in Latin). Described from the mountains of Yakushima, a small island between Japan proper and the Liu Kiu Islands, without mention of specimens.

Ardisia japonica var. *angusta* MAKINO & NEMOTO, Nippon shokubutsu soran (Flora of Japan) ed. 2 (1931) 900. Based on the preceding name.

Differs from the typical form of the species in its narrowly elliptic-lanceolate leaves, about 5 cm long, 1 to 1.3 cm wide, and its triangular-lanceolate, ciliate sepals.

JAPAN, Yakushima: *G. Masamune,* July 23, 1924 (*Y*).

The cited specimen, from which the above description is drawn, has narrower leaves and sepals than are shown in the drawing which accompanies the original description. It is from the type locality and is distinctly different from the typical form of the species.

47. ARDISIA ORDINATA Walker sp. nov. Text fig. 27.

Frutex humilis, suffrutescens, rhizomatosus, caulibus erectis circa 35 cm longis, non ramosis, dense ferrugineo-pubescentibus; folia subverticillatim collata, chartacea, 6 ad 9 cm longa, 2.5 ad 4.5 cm lata, ovata vel elliptico-ovata, apice acuta, basi rotundata, margine erosedentata, dentibus apiculatis, supra juventate pubescentia maturitate praeter costam glabra, subtus minutissime puberula, pilis e venulis reticulatis ad venas et costam sensim longioribus et densioribus, nervibus lateralibus circa 8 jugis, prope marginem confluentibus; inflorescentiae laterales in internodo sitae, simplices, subumbellatae, pauciflorae, 0.8 ad 2 cm longae, ferrugineo-strigosae, pedunculo bracteis paucis, sparsis vel confertis, lanceolatis vel lineatis, 1 ad 2 mm longis donato; flores ignoti; sepala fructu vix 1.5 mm longa, ovata vel acuta, punctata vel vix punctata, ciliata; fructus immaturus puberulus.

A suffrutescent undershrub with creeping rhizome, the erect stem up to 35 cm long,[57] unbranched, densely ferruginous-pubescent; leaves whorled or clustered at nodes, the channeled petiole 1 to 2 cm long, strigose, the blade chartaceous, ovate or elliptic-ovate, obtuse to rounded at base, acute at apex, 6 to 9 cm long, 2.5 to 4.5 cm wide, erose-dentate with apiculate teeth, pubescent above when young, dull, dark green and glabrous except on midrib above when mature, paler and very minutely puberulent beneath, the hairs progressively longer and denser from reticulate veinlets to raised veins and midrib, the lateral nerves about 8

[57] The field label designates this plant as an erect shrub 1 m high, but this doubtless includes much of the rhizome.

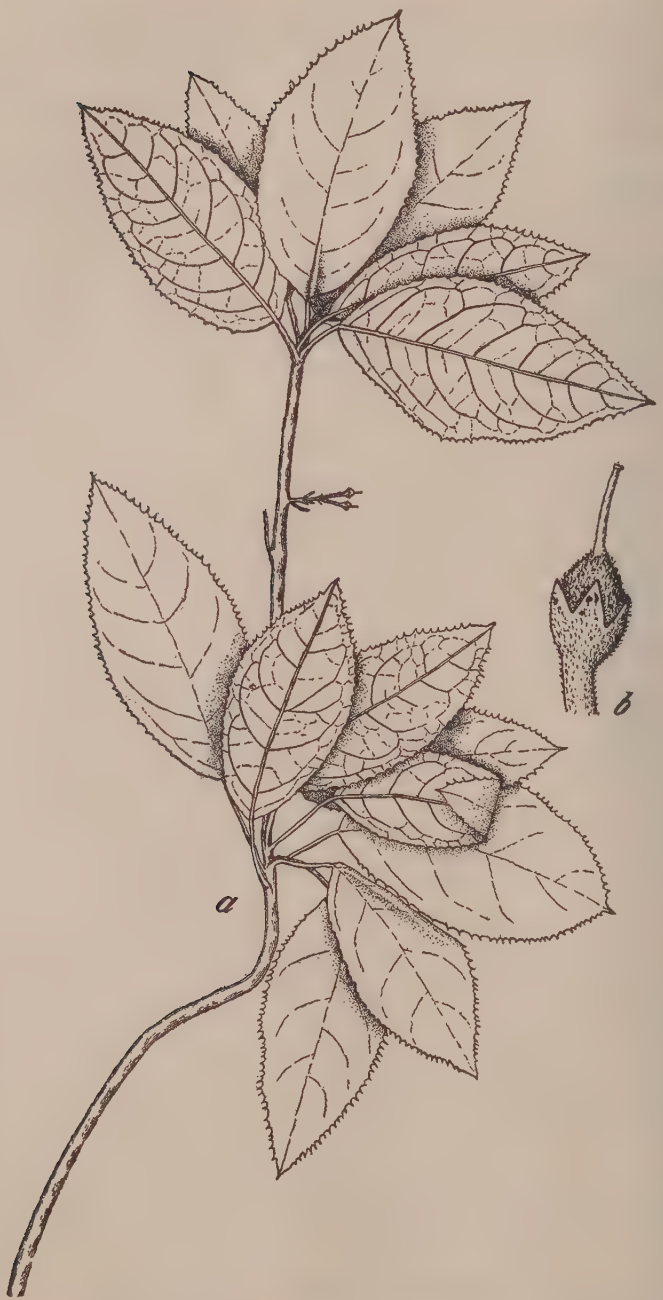

FIG. 27. *Ardisia ordinata* Walker sp. nov. *a*, upper part of plant with inflorescences, × ½; *b*, very immature fruit and calyx; × 5. Drawn from the type, *S. K. Lau 27381* (*W*).

pairs, curved-ascending, more or less united near margin; inflorescences lateral on internodes, simple, subumbellate, few-flowered, 0.8 to 2 cm long, ferruginous-strigose, the peduncle very short, bearing a few scattered or clustered lanceolate to linear bracts (1 to 2 mm), the pedicels 5 mm long, slender, strigose; flowers unknown; sepals in fruit ovate, acute, scarcely 1.5 mm long, ciliate, more or less punctate; immature fruit purple or reddish, puberulent.

Type in the United States National Herbarium, *no. 1719220*, collected by *S. K. Lau, no. 27381*, in dense woods at Loktung, Hainan, July 1, 1931; duplicate at the Arnold Arboretum.

This species most nearly resembles *A. pubivenula* Walker, being scarcely distinguishable in leaves except for the absence of the excess intervenular tissue which causes the rugose character of the latter. The stems, however, are much longer with the leaves arranged in storied whorls (hence the specific name *ordinata*, meaning arranged, or layered), and the inflorescences are much shorter. Eventually when *A. odontophylla* Wall. is better known, the present species may prove to be related to it.

48. **ARDISIA MACLUREI** Merr.

Ardisia Maclurei Merr., Philip. Journ. Sci. 21 (1922) 351. Based on *Canton Christian College 8668* (cited as *McClure 8668*) from the Five Finger Mountains, Hainan, in the herbarium of the University of California. The type has been examined.

A suffrutescent undershrub, the upright branches 4 to 15 cm long, densely fuscous-villose with crisped hairs when young, becoming glabrous; leaves subverticillate, rarely alternate, the petiole about 5 mm long, densely pilose, the blade thin-chartaceous, elliptic or slightly obovate, cordate at base, broadly acute or obtuse at apex, 5 to 6 cm long, 2.5 to 3 cm wide, irregularly serrate and ciliate on margin, abundantly pilose on both surfaces especially on the prominent midrib, the midrib raised beneath, the lateral nerves about 6 pairs, prominent, ending in the teeth; inflorescences subterminal, subumbellate, 4- to 6-flowered, pilose, the peduncles 4 cm long, bearing a few linear to narrowly lanceolate, ciliate or pilose bracts (3 to 5 mm), the slender pedicels 5 to 7 mm long; flowers about 4 mm long, the color unknown; sepals shortly united at base, narrowly lanceolate, acute, about equaling petals, pilose or ciliate, 3-nerved, not punctate; petals ovate, acuminate, glabrous, not punctate; stamens slightly shorter than petals, the anthers ovate, sagittate at base, slenderly acute at apex, not punctate on back; pistil about equaling petals; fruit 6 mm in diameter, dark reddish, not punctate, glabrous.

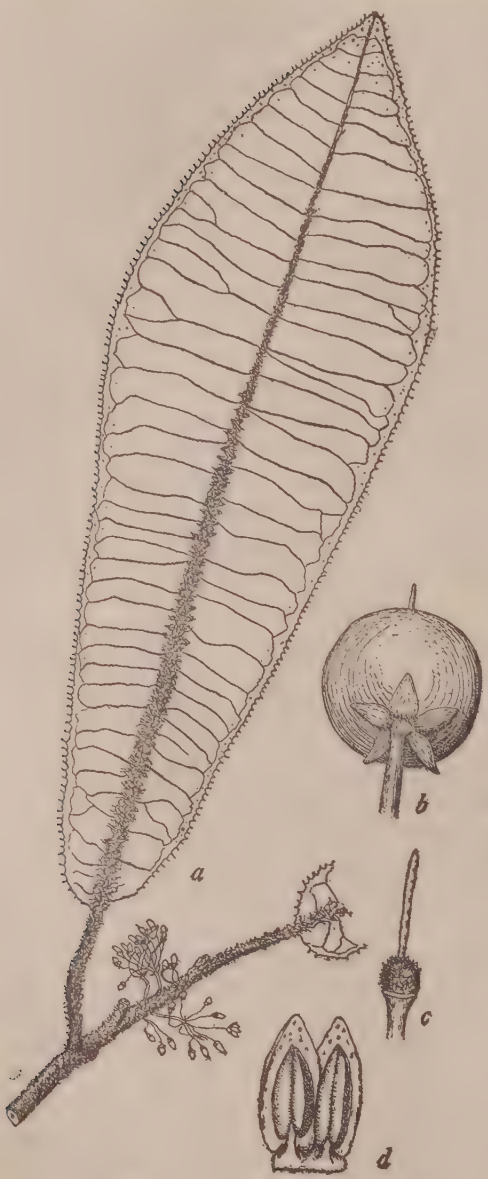

FIG. 28. *Ardisia scalarinervis* Walker. *a*, branchlet with inflorescences, × ⅔; *b*, fruit, × 4; *c*, pistil, × 4; *d*, portion of corolla with stamens, × 4. Drawn from the type, *Henry 12021* (*W*).

HAINAN: *C. C. C. 8668* (*NA, Y*), *9416* (*NA*), *9552* (*A, NA*); *F. C. How 72049* (*A*); *S. K. Lau 27353* (*A, W*); *C. Wang 36036* (*Y*).

This small, subherbaceous, almost stemless species is easily recognized by its cordate leaf bases.

49. ARDISIA SCALARINERVIS Walker. Text fig. 28.

Ardisia scalarinervis WALKER, Journ. Washington Acad. Sci. 21 (1931) 477. Based on *Henry 12021* from Szemao, Yunnan, in the United States National Herbarium.

A decumbent undershrub, the ascending branches about 40 cm high, densely fuscous-tomentose; leaves clustered at ends of branches, the petiole about 4 cm long, fuscous or ferruginous-to-tomentose or -villose, the blade chartaceous, obovate or oblanceolate, tapering toward the narrowly rounded base, rather broadly acute or subacuminate at apex, 20 to 30 cm long, 7 to 8 cm wide,

closely erose-dentate with apiculate teeth, prominently bullate-punctate near margin and apex on both sides, glabrous and dark green above, brownish and sparingly and minutely puberulent beneath, the midrib prominent beneath, densely shaggy-villose with long, ferruginous, crisped hairs, the lateral nerves 25 or more pairs, forming a right or obtuse angle with midrib; inflorescences up to 3 cm long, subterminal or axillary pubescent clusters of several short-peduncled umbels, each about 7-flowered, the pedicels slender, about 1.5 cm long; flowers 4 mm long, the color unknown; sepals shortly united at base, triangular-ovate, acute, 1.5 mm long, ferruginous-puberulent, minutely ciliate, not punctate; petals ovate or oblong-ovate, acute, glabrous, black-punctate at apex; stamens shorter than petals, the anthers ovate, sagittate at base, acute or submucronate at apex, not punctate on back; pistil about equaling petals, the ovary hairy; fruit 5 to 7 mm in diameter, reddish or blackish, not punctate, minutely puberulent or glabrous.

YUNNAN: *Henry 12021* (*Y*), *12021A* (*Y*), *12021B* (*Y*).

This species is very distinct in its oblanceolate or obovate leaves with densely shaggy midrib and in the ladderlike arrangement of the lateral nerves, which are usually divergent at a right angle from the midrib. Dunn(13) cites *Henry 12021A* under *Ardisia odontophylla* Wall., an apparently erroneous identification, although that species is not well known.

56. ARDISIA GIGANTIFOLIA Stapf.

Ardisia gigantifolia STAPF, Kew Bull. Misc. Inf. 1906 (1906) 74. Based on a specimen grown by J. Veitch & Sons in England in 1901 from seed sent from "South China" by E. H. Wilson, the type now preserved in the Kew herbarium. A photograph and a rubbing from the type have been examined.

Ardisia pseudoverticillata MERR., Journ. Arn. Arb. 8 (1927) 13; CHUN, Sunyatsenia 1 (1934) 287 (description amended). Based on *Canton Christian College* (*To Kangpeng and Tsang Wai-tak*) *12657* from Lung Tau Mountain, northern Kwangtung, in the United States National Herbarium. The type has been examined.

An undershrub of somewhat doubtful habit, probably with a rhizome, originally described from cultivated specimens as having thick stems 15 cm high (but *S. K. Lau 27141* from Hainan is labeled as 3 m high), the stem glabrous or very minutely puberulent, about 1 cm in diameter; leaves mostly clustered near apex of stem, petiolate (2 to 3 cm), the blade membranous or chartaceous, elliptical to elliptic- or oblong-lanceolate, tapering to a distinctly winged petiole,[58] narrowly obtuse or sharply acute

[58] *See* description by Chun in Sunyatsenia 1 (1934) 287.(9)

or subacuminate at apex, 15 to 35 cm long, 5 to 15 cm wide, closely erosedentate with apiculate teeth, conspicuously scattered-bullate or glandular-punctate on both sides, dark green above, glabrous on both sides or slightly grayish pubescent on the much paler lower surface; midrib impressed above, prominently raised beneath, the lateral nerves prominent, 15 to 20 pairs, forming an angle of about 60° with the midrib, not uniting in a marginal nerve; inflorescences subterminal or axillary, pyramidal- or racemose-paniculate, 20 to 30 cm long, nearly equaling leaves, about 10 cm wide, the peduncles 8 to 15 cm long, the branches glabrous or finely puberulent with a subumbellate or cymose cluster of 8 to 15 flowers, the pedicels slender, about 1 cm long; flowers white or pink, about 4 mm long; sepals united at base, narrowly triangular-ovate or lanceolate, acute or broadly acute, about 1.5 mm long, obscurely ciliate, very minutely puberulent, punctate; petals ovate, acute or obtuse, sparingly punctate; stamens about $\frac{2}{3}$ length of petals, the anthers ovate, sagittate at base, acute or obtuse at apex, not glandular on back; pistil about equaling petals, the ovary glabrous or puberulent; fruit 6 mm in diameter, somewhat fleshy, reddish, longitudinally striate, somewhat punctate, glabrous.

Southern China up to Yangtze basin.

KIANGSI: *S. K. Lau 4193* (*W*).

HAINAN: *C. C. C. 17673* (*Y*); *F. C. How 72728* (*A*); *S. K. Lau 27141* (*A, W*).

KWANGTUNG: *C. C. C. 12657* (*C, NA, W*), *14898* (*NA, Y*); *S. K. Lau 900* (*A, Y*).

KWANGSI: *Ching 8384* (*W, Y*); *W. T. Tsang 22355* (*A, W*), *24499* (*A*); *C. Wang 39475* (*A*).

YUNNAN: *H. T. Tsai 51865* (*A*)?

This species is readily recognized by its large, closely erosedentate leaves with apiculate teeth and rather numerous lateral nerves, not pubescent or only slightly so beneath, and by its elongate-paniculate inflorescences.

51. ARDISIA SILVESTRIS Pitard. Text fig. 29.

Ardisia Silvestris PITARD, in Lecomte, Fl. Gén. Indo-Chine 3 (1930) 816. Based on collections by Balansa and Bon in Tonkin and by Eberhardt and Poilane in Annam, all in the Paris herbarium. A photograph of *Eberhardt 3095*, in the Paris herbarium, obviously the one cited by Pitard, has been examined.

A small forest undershrub with creeping rhizome, the erect stem unbranched, thick (5 to 10 mm), about 50 cm high, woody.

closely covered with large leaf scars, glabrous; leaves clustered near apex of stem, sessile (or the petiole broadly winged by the decurrent blade), the blade chartaceous, elliptic, oblanceolate or

FIG. 29. *Ardisia Silvestris* Pitard. *a*, whole plant, × ½; *b*, calyx and pistil, × 5; *c*, corolla and stamens, × 5; *d*, stamen, back view, × 5. Part *a* drawn from *F. C. How 72037* (*W*); parts *b* to *d* from *Petelot 4381* (*W*), from Indo-China.

ovate, long-tapering toward base, acute or obtuse at apex, 20 to 40 cm long, 6 to 12 cm wide, closely erose-dentate with apiculate teeth, deep green or olive-green and appressed fuscous-hirsute above when young, becoming glabrous, paler beneath, fuscous-

hirsute at least on prominently raised midrib and lateral and connecting nerves, with or without small black-punctate glands, the midrib thick and raised beneath, the lateral nerves about 25 to 35 pairs, obliquely ascending, inconspicuous above, prominent beneath; inflorescences axillary, racemose-paniculate, about 10 cm long, the axis and 4 to 6 primary branches appressed-hirsute or puberulent, the latter with a terminal subumbellate cluster of 5 to 10 puberulent pedicels (3 to 8 mm), the bracts about 4 mm long, linear or lanceolate; flowers red [*ex* Pitard] or pale yellow [*ex F. C. How 72037*], 3 to 4 mm long; sepals ovate, obtuse or acute, 1.5 mm long, glabrous, not all or obscurely punctate; petals broadly elliptic-ovate, obtuse or rounded, punctate; stamens nearly equaling petals, the anthers lanceolate, acute, not glandular on back; pistil about equaling petals; fruit 7 to 8 mm in diameter, red, lustrous, not punctate, glabrous.

Hainan and Indo-China.

HAINAN: *F. C. How 72037* (*A, W*).

This species most closely resembles *Ardisia gigantifolia* Stapf, from which it differs in the thicker and rougher stems, the sessile leaves, and the fuscous, appressed-hirsute pubescence on the midrib and lateral and connecting nerves beneath.

52. **ARDISIA REPLICATA** Walker. Text fig. 30.

Ardisia replicata WALKER, Bull. Fan Mem. Inst. Biol. 9 (1939) 169, *pl. 21*. Based on *Henry 11444* from Mengtze, Yunnan, at the New York Botanical Garden.

A low, suffrutescent undershrub, the rhizome creeping, the erect stem up to 40 cm high, unbranched, densely fuscous-villose or tomentose; leaves alternate, the petiole 2 to 5 cm long, densely tomentose, grooved or narrowly wing-margined, the blade ovate to elliptic-ovate, rounded at base, broadly acute or subacuminate at apex, about 14 cm long, 6 cm wide, finely and sharply serrate with lanceolate apiculate teeth sharply folded under when dry, ferruginous-puberulent above when very young, becoming glabrous and dull green or brownish, sometimes wrinkled when mature, minutely ferruginous-puberulent and scarcely paler beneath; midrib sometimes impressed above, prominent and densely fuscous-tomentose or pubescent beneath, the lateral nerves 15 pairs, very inconspicuous or impressed above, raised beneath, pubescent, uniting in an undulate marginal nerve, the veinlets more or less prominent and scalariform, connecting the lateral nerves, sometimes pubescent; inflorescences racemose or paniculate, lateral in axils of subulate bracts (about 8 mm) below upper leaves,

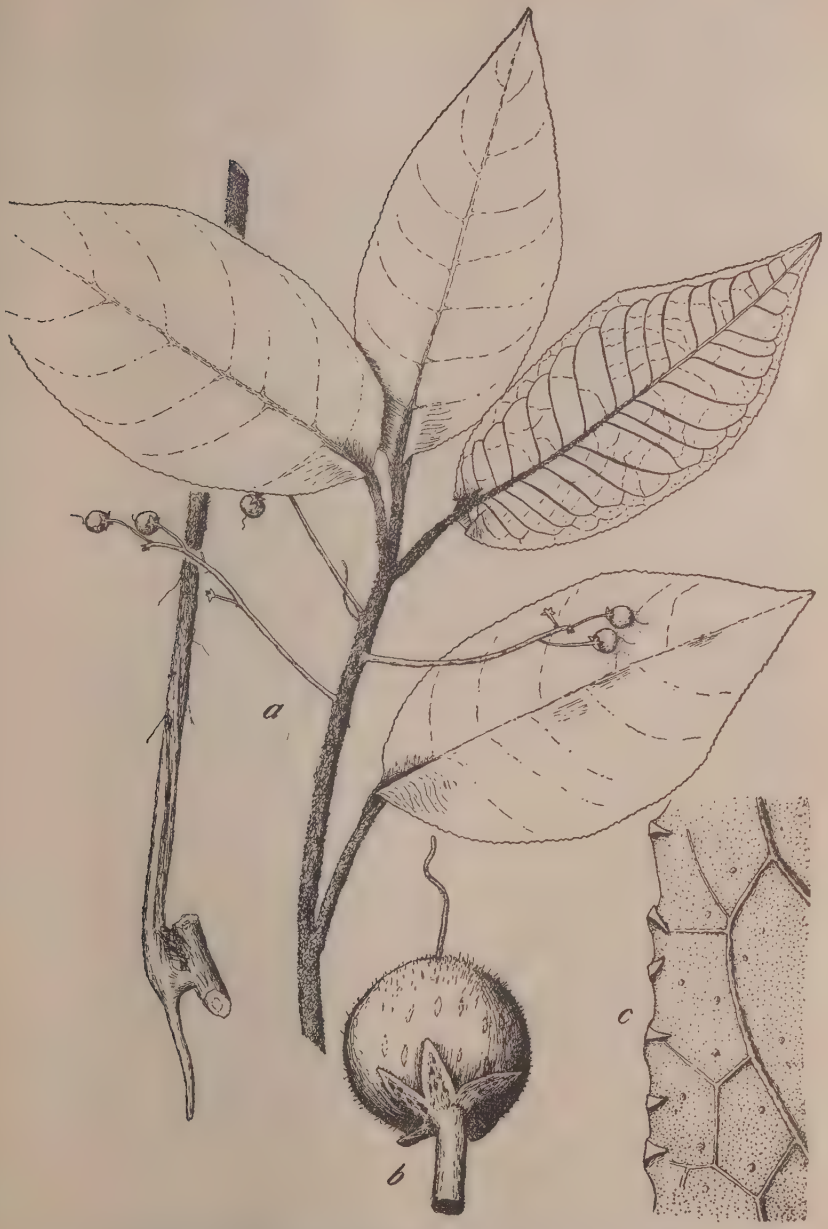

FIG. 30. *Ardisia replicata* Walker. *a*, whole plant, × ½; *b*, fruit, × 5; *c*, portion of under surface of leaf, × 5. Drawn from the type, *Henry 11444* (*W*).

5 to 7 cm long, the peduncles fuscous-pubescent or puberulent, the pedicels about 6 mm long; flowers pale pink, 4 mm long; sepals elliptic-ovate or ovate, obtuse, 1 to 1.5 mm long, more or less punctate, glabrous or fuscous-puberulent especially on margin; petals ovate, acute or obtuse, punctate with small reddish and black glandular dots; stamens about $\frac{2}{3}$ length of petals, the anthers oblong, apiculate, not punctate on back; pistil about equaling petals, the ovary pubescent; fruit 6 mm in diameter, dark reddish, not punctate or obscurely so, the glands reddish, fuscous-pubescent.

YUNNAN: *Henry 11444 (Y); H. T. Tsai 60906 (A, W).*

The prominently serrate leaf margins with the teeth distinctly folded under, at least in dried specimens, and the prominently veined under surfaces of the leaves distinguish this species.

53. ARDISIA PUBIVENULA Walker sp. nov. Text fig. 31.

Frutex, subherbaceus vel suffrutescens, rhizomate longo, caulibus erectis non ramosis, 2 ad 4 cm altis, ferrugineo-pubescentibus vel glabris dissitifoliis; folia chartacea, rugosa, 8 ad 11 cm longa, 4 ad 6 cm lata, apice acuta, margine serrata, dentibus lanceolati apiculatis late patentibus vel replicatis, supra primo pubescentia glabrescentia, subtus minutissime puberula, pilis e venulis reticulatis ad venas et costam, sensim longioribus et densioribus, nervibus lateralibus circa 8 jugis acute divergentibus deflectentibus, in nervam lateralem non confluentibus; inflorescentiae axillares vel laterales racemosae, circa 3 cm longae, puberulae, pedicellis 8 mm longis, gracilibus; flores ignoti; sepala fructu 1.5 mm longa, ovata, obtusa, obscure punctata, ciliata.

A subherbaceous or suffrutescent undershrub with long creeping rhizome, the erect stems unbranched, 2 to 4 cm high, ferruginous-pubescent or glabrous; leaves with channeled, densely ferruginous-strigose or tomentose petiole, 2 to 4 cm long, the blade chartaceous, rugose from excessive intervenular tissue, ovate, rounded or subcordate at base, broadly acute at apex, 8 to 11 cm long, 4 to 6 cm wide, finely and sharply serrate with lanceolate, apiculate teeth spreading or sharply folded under, pubescent above when young, glabrescent and dull green above when mature, somewhat paler and very minutely puberulent beneath, the hairs progressively larger and denser from the more or less reticulate veinlets to the raised veins and midrib, the lateral nerves about 8 pairs, diverging at an acute angle, curved-ascending, not uniting in a definite marginal nerve; inflorescences lateral, in axils of bracts (2 mm), racemose, about 3 cm long, pube-

rulent, the pedicels 8 mm long, slender; flowers unknown; sepals in fruit ovate, obtuse, 1.5 mm long, ciliate, obscurely punctate; fruit 6 mm in diameter, bright red when fresh, minutely puberulent.

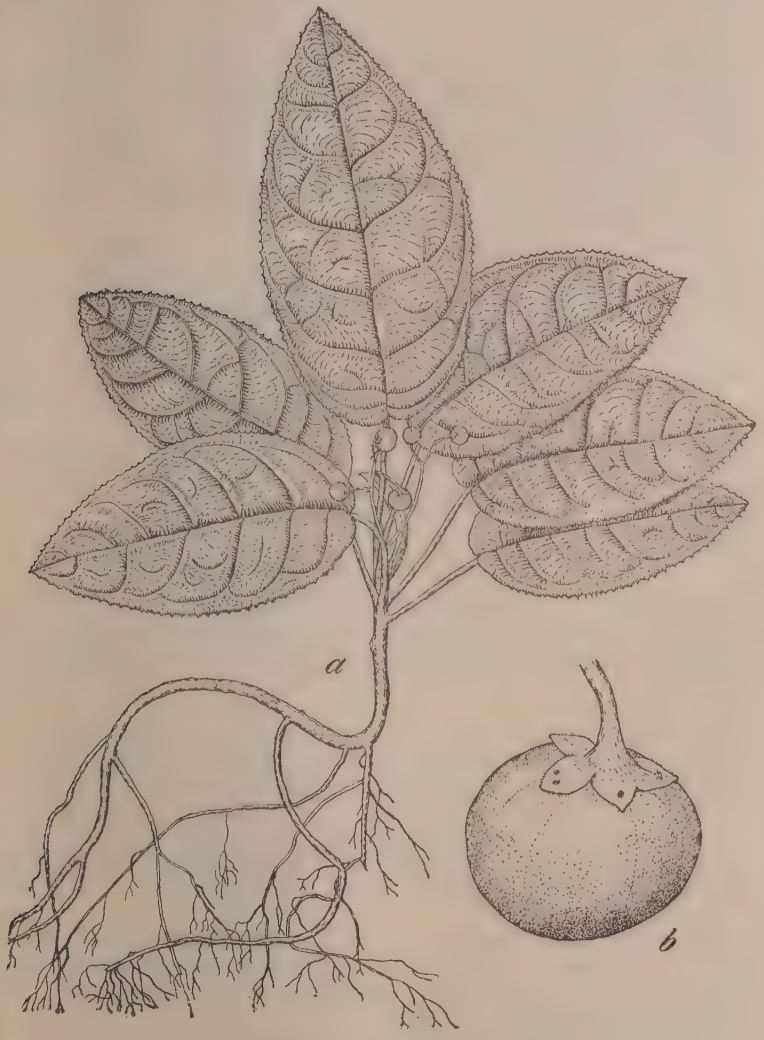

FIG. 31. *Ardisia pubivenula* Walker sp. nov. *a*, whole plant, × ½; *b*, fruit, × 5. Drawn from the type, *F. C. How 73665* (*W*).

Type in the United States National Herbarium, *no 1666467*, collected by *F. C. How*, *no 73665*, at Po-teng, Hainan, 1000 m

altitude, September 13, 1935; duplicates at the Arnold Arboretum and Sun Yatsen University.

This species seems most nearly related to *A. replicata* Walker from Yunnan, but is distinguished by its shorter stems and rugose leaves with fewer lateral nerves, these not uniting in a definite marginal nerve. It also bears a resemblance to *A. ordinata* Walker, and may prove related to *A. odontophylla* Wall. from Siam and Assam, when that species is better known. An additional specimen, which closely resembles the type, is *H. Y. Liang 69643*, collected on Sup-man-ta Shan, Kwangsi, in 1937. It differs, however, in having smooth, not rugose leaves.

Uncertain Species

1. ARDISIA CITRIFOLIA Hayata.

Ardisia citrifolia Hayata, Icon. Pl. Formosa 5 (1915) 88. Based on a collection by T. Soma, December 1910, at Tonroku, Formosa.

Bladhia citrifolia Nakai, Bot. Mag. Tokyo 35 (1921) (98). Based on *Ardisia citrifolia* Hayata.

According to the description, this plant resembles *Ardisia punctata* Lindl. in indument and in shape and size of leaves and sepals. Until the type specimen has been examined this species must be considered as uncertain.

2. ARDISIA CRISPATA Hayata.

Ardisia crispata Hayata, Icon. Pl. Formosa 5 (1915) 89.

Hayata cites this name under *Ardisia crispa* (Thunb.) A. DC. as a synonym with the citation "Hayata, Fl. Mont. Formos. p. 180 (non Roxb.)." However, the name is not found in that paper.(20)

3. ARDISIA GLABRA A. DC.

Ardisia glabra A. DC., Trans. Linn. Soc. 17 (1834) 123. Based on *Bladhia glabra* Thunb., Trans. Linn. Soc. 2 (1794) 331, which was based on Thunberg's "Bladhia foliis serratis glabris laevibus" among the "Plantae obscurae" in his Fl. Japon.(57, p. 350) without mention of specimens. The type is probably in the Thunberg herbarium in Upsala, Sweden.

Mez placed this plant as a synonym of *Ardisia japonica* (Hornsted) Blume. Nakai(45, p. 290) refers it to *Chloranthus glaber* Makino. These allocations cannot be verified until the type can be examined.

4. ARDISIA JAPONICA var. MONTANA Miquel.

Ardisia japonica var. *montana* Miquel, Ann. Mus. Bot. Lugd. Bat. 2 (1866) 263. Based on a collection by Pierot from Mount Fuji, Japan, determined by Siebold as "*A. montana*".

Ardisia montana SIEB. in Miquel, Ann. Mus. Bot. Lugd. Bat. 2 (1868) 263. Placed as a synonym of the preceding variety.

Tinus montana KUNTZE, Rev. Gen. Pl. 2 (1891) 974. Based on *Ardisia montana* Sieb.

Bladhia montana NAKAI, Trees & Shrubs Indig. Jap. 1 (1922) 203, *fig. 117;* Bot. Mag. Tokyo 38 (1924) 41. Based on *Ardisia montana* Sieb.

Nakai says this species resembles *Ardisia japonica* and *A. pusilla,* but is not found growing with either of those species. Y. Ogura (46, p. 164) says:

> This is a small shrub very similar to *B.* [*Bladhia*] *japonica,* the stem consisting of creeping and erect portions. It is easily distinguished from the latter in possessing plenty of hairs, these being especially abundant near the apex. Such hairs are long and uniseriate, and among them are to be found short glandular ones.

Until more specimens from Japan, including types, especially of the many varieties of *Ardisia japonica* (Hornsted) Blume, can be examined, the exact status of *Ardisia japonica* var. *montana* Miquel can not be determined.

5. ARDISIA KOTOENSIS Hayata.

Ardisia kotoensis HAYATA, Journ. Coll. Sci. Univ. Tokyo 30 [1] (1911) 180. Based on a collection by T. Kawakami at Kotosho, Taito, Formosa.

Bladhia kotoensis NAKAI, Bot. Mag. Tokyo 35 (1921) (99). Based on *Ardisia kotoensis* Hayata.

No specimens have been seen that agree with the original description, which in turn does not agree well with any presented here.

6. ARDISIA KUSUKUSENSIS Hayata.

Ardisia kusukusensis HAYATA, Icon. Pl. Formosa 5 (1915) 90. Based on a collection by B. Hayata and S. Sasaki, June, 1912, at Kusukusu, Formosa.

No specimen of this species, belonging in § *Crispardisia,* has been seen. The description does not agree well with any here given.

7. ARDISIA MACROCARPA Wall.

Ardisia macrocarpa WALL. in Roxb., Fl. Ind. ed. Carey 2 (1824) 277. Originally described as growing "on most of the hills about the valley of Nipal (India), blossoming during the rains and ripening its fruit in winter," without mention of specimens.

Tinus crispa var. *macrocarpa* KUNZTE, Rev. Gen. Pl. 2 (1891) 405. Based on *Ardisia macrocarpa* Wall.

Handel-Mazzetti(19, p. 756) cites his collections *8997*, *9123*, and *9801* under this name. Although the original description gives no indication of a type specimen, DeCandolle's Prodromus(8, p. 134) and Hooker's Flora of British India,(11, p. 594) cite *Wallich 2267* from Nepal, and Mez cites this number as well as specimens of Clarke and Griffith, all from the Himalayan region. The writer has seen only the Handel-Mazzetti specimens on loan from Vienna, but cannot separate them from *A. crenata* Sims on any certain characters, although *Handel-Mazzetti 9801* differs decidedly in its larger leaves. Handel-Mazzetti wrote the author in October, 1935, as follows:

> As to *Ardisia macrocarpa*, this is a rain forest plant, whilst *A. crenata* (*A. crispa* auct., non *Bladhia crispa* Thunb.) is a plant of drier localities. I had certainly the impression that the former has always large fruits, though I saw the latter only one year later. Whence I am little inclined to a complete reduction of that.

DeCandolle expresses doubt of its distinctness from "*A. crispa*" A. DC (= *A. crenata* Sims). Since the writer has not sufficiently studied the Indian and southern Asiatic species, the exact status of *A. macrocarpa* Wall. and the three Handel-Mazzetti specimens from Yunnan must remain in doubt.

8. ARDISIA MOURETII Pitard.

> *Ardisia Mouretii* PITARD in Lecomte, Fl. Gén. Indo-Chine 3 (1930) 864. Based on Mouret's collection from forests of Nam-dink, Tonkin, Indo-China.

The original description of this species in § *Crispardisia* states that it occurs also in Yunnan and Hongkong. A fragment in the Arnold arboretum of *J. Esquirol 1161* from Hongkong, taken from the original in the Paris herbarium, determined by J. Pitard as *A. Mouretii* Pitard, has been examined. It differs from *A. crenata* Sims in having more numerous secondary axes in the inflorescences. Pitard's descriptions of these two species show some differences, but the apparent variability of *A. crenata* seems to destroy their value. Pitard separates these species in the key by the simple umbels of *A. crenata*, but states in the description that it occasionally has secondary axes. However, a majority of the specimens examined bear secondary axes, although not quite as many as in *Esquirol 1161* from Hongkong. Until more specimens can be examined it seems advisable to consider *A. Mouretti* as uncertain.

9. ARDISIA PATENS var. TONKINENSIS Pitard.

Ardisia patens var. *tonkinensis* PITARD in Lecomte, Fl. Gén. Indo-Chine 3 (1930) 872. There is cited with the original description: "Tonkin: region de Hanoi, Kien-Khe, mont Nomcong, et de Ninh-binh à Lac-tho, Nuong-kiec (Bon)." A photograph and fragment at the Arnold Arboretum show this specimen to be *Bon 3409*.

This variety is accredited in the original description to China also, but without citation of specimens.

10. ARDISIA RECTANGULARIS Hayata.

Ardisia rectangularis HAYATA, Journ. Coll. Sci. Univ. Tokyo 30[1] (1911) 182. The original description cites: "Shintiku; Goshizan, leg. T. Kawakami et U. Mori, June, 1906 (no. 1435): Kusshaku, leg. S. Nagasawa, 1905 (no. 358); Taito; Moremirisha, leg. K. Miyake, Dec. 1899." None of of these specimens have been examined.

The original description states that this species is "very near *A. crenata* Sims, but differs from it by much broader leaves." Nakai(44, p. 98) placed this species as a synonym of *Bladhia crispa* var. *Taquetii* Léveillé, here considered a synonym of *A. crenata* Sims.

11. ARDISIA REMOTISERRATA Hayata.

Ardisia remotiserrata HAYATA, Journ. Coll. Sci. Univ. Tokyo 30[1] (1911) 183; Icon. Pl. Formosa 5 (1915) 92. Based on *Nakahara 854*, collected December, 1906, at Garanbi, Formosa.

The original description resembles that here given for *A. cornudentata* Mez in every respect, except that the flowers are described as 1 mm longer and the fruit as 2 mm larger in diameter. Since Hayata republished Mez's original description of *A. cornudentata* without modification, he may not have known that species. Thus it is still more likely that *A. remotiserrata* Hayata should be considered a synonym of Mez's species, but this cannot be definitely established at present.

12. ARDISIA RHYNCHOTECHIOIDES (Kränzl.) Hand.-Mazz.

Ardisia rhynchotechioides HAND.-MAZZ., Symb. Sin. pt. 7 (1936) 758. Based on *Conandron rhychotechioides* Kränzl.

Conandron rhynchotechioides Kränzl., Repert. Sp. Nov. Fedde 24 (1928) 218. Based on *Wilson (Veitch Exped.) 2765 in part*, in the Vienna herbarium, from Lao-kay, Tonkin, at the Yunnan border.

Although a photograph and fragment of the type have been seen this species cannot be verified at the present time.

13. ARDISIA RIGIDA Kurz.

Ardisia rigida KURZ, Journ. Asiat. Soc. Bengal 1873[2] (1873) 87; For. Fl. Burma 2 (1877) 107. Originally discribed from Tenesserim or the Andaman Islands without mention of specimens.

Hemsley(16, p. 66) attributes this species to Hainan on the basis of a collection at the Kew herbarium by B. C. Henry. This specimen has not been seen. It may be the specimen cited by Mez under his description of *A. hainanensis* Mez(43, p. 138) as "Henry 2," a duplicate of which at the New York Botanical Garden is *A. humilis* Vahl.

14. ARDISIA SIMPLICICAULIS Hayata.

Ardisia simplicicaulis HAYATA, Journ. Coll. Sci. Univ. Tokyo 30[1] (1911) 183. Based on *T. Kawakami & U. Mori 2700*, collected in March, 1907, at Tannasison, Shinko, Formosa, and on a specimen collected by B. Hayata, August 1900, at Schichiseitonzan, Formosa. Neither of these has been seen.

The original description states that this species is "near *A. hortorum* Maxim., but differs from it in having much narrower leaves."

15. ARDISIA SINENSIS Hort.

Ardisia sinensis HORT. in Steud., Nom. Bot. ed. 2 1 (1840) 122, *nomen nudum.*

Although Mez placed this name as a doubtful synonym of *A. crispa* (Thunb.) A. DC. (that is, *A. crenata* Sims), the correctness of this allocation cannot be verified.

16. ARDISIA STENOSEPALA Hayata.

Ardisia stenosepala HAYATA, Icon. Pl. Formosa 5 (1915) 92. Based on Hayata's collection cited as "Mt. Arisan: Funkiko, Jan. 1912."

The specimen in the herbarium of the University of California, *no. 345519*, collected by R. Kanehira and S. Sasaki, *Herb., Gov't. Formosa no. m223*, on Mount Arisan, January 1918, agrees with this description quite satisfactorily, except that the leaves are somewhat smaller. It comes, furthermore, from Mount Arisan, the type locality. Hayata compares this species with *A. cornudentata*, but states that it differs in the "linear sepals" contrasted with the suborbicular sepals of *A. cornudentata*. However, until further material has been examined, the status of this species must remain in doubt. (*See also* notes on *Faurie 337* under Specimens not Determined, p. 154.)

17. ARDISIA SUISHAENSIS Hayata.

Ardisia suishaensis HAYATA, Icon. Pl. Formosa 5 (1913) 93. Based on an unnumbered specimen collected by B. Hayata and S. Sasaki at Suisha, Formosa, May, 1912. This collection has not been seen.

The original description states that this species is "near *Ardisia cornudentata* Mez, but differs from it by the terminal very

short sessile umbels." Hayata apparently did not know *A. cornudentata* Mez (*see* discussion under *A. remotiserrata*) and since the description here given for Mez's species and the description given by Hayata for *A. suishaensis* are closely similar, it is probable that these two will be found identical, when authentic material of the latter has been examined.

18. ARDISIA TACHIBANA Makino.

Ardisia Tachibana MAKINO, Bot. Mag. Tokyo 6 (1892) 53, *nomen nudum.*

This species has been referred to *Bladhia crispa* Thunb.(28, p. 310; 36, p. 354; 45, p. 285) Makino(34, p. 117) placed it as a synonym of *A. hortorum* Maxim. Thus it is probably a synonym of *Ardisia crenata* Sims, but need not be considered as it was never described. M. Shirai(54, p. 223) refers to the cultivation of forms of "Ardisia Tachiba" at the end of the eighteenth century and the books published concerning them.

19. ARDISIA VILLOSA (Thunb.) Mez var. LIUKIUENSIS (Nakai) Makino and Nemoto.

Bladhia villosa var. *liukiuensis* NAKAI, Bot. Mag. Tokyo 35 (1921) (99) (described in Japanese only); Bot. Mag. Tokyo 38 (1924) 42 (described in Latin). No specimens are cited, at least in English.

Ardisia villosa (Thunb.) Mez var. *liukiuensis* (Nakai) MAKINO & NEMOTO, Nippon shokubutsu soran (Flora of Japan) ed. 1 (1925) 395.

As no specimens have been seen which can be considered to represent this variety of *Bladhia villosa* Thunb., here considered as a synonym of *Ardisia pusilla* A. DC., the variety must be considered as uncertain. The description given in Latin is as follows: "Folia ovata v. elliptica basi acuta v. obtusa v. subcordata, margine repandata (non serrata). Hab. in Liukiu." In Bot. Mag. Tokyo vol. 38 the original citation is given as in Nakai, Trees and Shrubs Indigenous in Japan Proper 1 (1922) 206, but this is an error, as all the new varieties and new combinations in that work were first published in Bot. Mag. Tokyo 35 (1921) (96)–(99).

20. BLADHIA VIOLACEA Suzuki-Tokyo.

Bladhia violacea SUZUKI-TOKYO, Trans. Nat. Hist. Soc. Formosa 25 (1935) 41. Based on the author's collection "in an evergreen broad-leaved primary forest between Tyakon and Rimogan, Praefecture of Taihoku-syû," Formosa. No specimens have been seen.

The original description suggests that this may belong in § *Bladhia.*

EXCLUDED SPECIES

1. ARDISIA ESQUIROLII Léveillé.

Ardisia Esquirolii LÉVEILLÉ, Repert. Sp. Nov. Fedde 12 (1913) 186.

This species, based on *Esquirol 1546* from Kweichow in the Léveillé herbarium, has been referred by A. Rehder to *Lysimachia lancifolia* Craib in the Primulaceæ.(50, 15 p. 294)

2. ARDISIA PERFORATA Léveillé.

Ardisia perforata LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 462.

This species, based on *Bodinier* (*L. Martin*) *1632* from Kweichow in the Léveillé herbarium, has been referred by A. Rehder to *Alangium Faberi* var. *perforatum* (Léveillé) Rehd. in the Alangiaceæ.(50, 15 p. 108)

3. ARDISIA DISCOLOR Léveillé.

Ardisia discolor LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 373.

This species, based on *Cavalerie 3610* from Kweichow in the Léveillé herbarium, has been referred by A. Rehder to *Cornus oblonga* Wall. in the Cornaceæ.(50, 15 p. 116)

4. ARDISIA MAIREI Léveillé

Ardisia Mairei LÉVEILLÉ, Cat. Pl. Yun-Nan (1916) 177, *nomen nudum.*

This species, probably based on a collection by E. E. Maire from "Long-ky," Yunnan, has been referred by A. Rehder to *Chloranthus brachystachyus* Blume in the Chloranthaceæ.(50, 10 p. 111)

IMPORTANT SPECIMENS NOT DETERMINED

1. *Canton Christian College* (*W. T. Tsang*) *16357* (*C, NA*) and *17344* (*W, Y*) are related to *Ardisia quinquegona* Blume and *A. depressa* C. B. Clarke, both in § *Akosmos,* but probably do not represent either. From the former they differ in their much more prominently veined leaves with slightly less definite marginal nerves, shorter inflorescences, ovate and obtuse or rounded sepals, and more distinctly ribbed fruits. From *A. depressa* they differ in the less definite marginal nerves and obtuse to rounded sepals, which resemble, however, the exception noted in the description of *A. depressa.* Because of the close similarity of these species and the uncertain status of some of the adjacent Indo-China species, it seems inadvisable to refer these specimens definitely.

2. *Faurie 337* at the Arnold Arboretum, collected at Bunkiko, Formosa, May, 1914, differs from all other specimens studied.

In many respects it corresponds with the description of *Ardisia stenosepala* Hayata, one of the Uncertain Species, but it cannot yet be finally identified.

3. *F. C. How 73043* (*A, W*), a shrub collected in a forest at Po-ting, Hainan, in July, 1935, at 350 m altitude, resembles *Ardisia quinquegona* Blume, *A. depressa* C. B. Clarke, and *A. yunnanensis* Mez. From *A. quinquegona* it differs in having larger leaves and nonpunctate sepals, and from *A. depressa* in its larger leaves with more numerous lateral nerves. Its almost glabrous inflorescences and leaves with very numerous lateral nerves distinguish it from *A. yunnanensis*. However, because of its rather close resemblance to these and to some still little understood Indo-Chinese species, it seems best to leave its identity in doubt for the present.

4. *H. Y. Liang 66809* (*W*), collected in Kwangsi, October 12, 1935, is in § *Crispardisia*, probably near *A. crenata* Sims. The specimen bears fruits only. In the absence of flowers and more abundant material it seems advisable not to describe another new species in this section, in which specific divisions are frequently rather obscure at best.

5. *Y. Tsiang 13413* in the Sun Yatsen University herbarium, collected in Ping-pien Hsien, Yunnan, March 9, 1934, is apparently related to *Ardisia odontophylla* Wall. or *A. velutina* Pitard. Until further material is available for study and until these species are better known, it seems inadvisable to base a new species on this specimen.

4. Genus EMBELIA Burm. f.

Embelia Burm. f., Fl. Ind. (1768) 62, *pl. 23*. Based on *Embelia ribes* Burm. f.

Samara Linn., Mant. Pl. ed. 2 (1771) 144, 199. Based on *Samara laeta* Linn. from Ceylon.

Calispermum Lour., Fl. Cochinch. (1790) 156; ed. Willd. (1793) 194. Based on *Calispermum scandens* Lour.

Choripetalum A. DC., Trans. Linn. Soc. 17 (1834) 131. Based on *Choripetalum aurantiacum* A. DC. from India.

Ribesiodes Kuntze, Rev. Gen. Pl. 2 (1891) 403. Based on *Ribesiodes* Linn., Fl. Zeyl. (1747) 190, the spelling altered, the type species being Linnaeus's *R. ribes* (1747).

Flowers unisexual, usually dicœcious, 2 to 3 mm long, 4- or 5-merous; sepals and petals free or very shortly united at base, the lobes imbricate or quincuncial, the petals spreading, elliptic to oblong, densely papillose within and on margin; stamens usually attached to petals, rarely free, the filaments distinct, elongate,

slender, anthers ovoid or oblong, dehiscing by slits or rarely by pores, generally punctate, sometimes verrucose on back; ovary much reduced in male flowers, conical or flask-shaped, in female flowers globose or ovoid, often pilose, rarely lepidote, the ovules few, in one series, style somewhat slender, cylindrical, shorter than or exceeding petals, the stigma disc-shaped, capitate or apiculate, rarely lobed; fruit a globose or rarely depressed or obovoid 1-seeded berry, with crustaceous or rarely bony endocarp, the seed subglobose, covered by membranous remnants of placenta, with more or less hollow base, the albumin ruminate, the embryo cylindrical, transverse.

Shrubs usually scandent on forest trees, rarely erect or arborescent, the leaves entire or serrate, sometimes distichous, rarely subsessile, inflorescences terminal or lateral, paniculate, racemose or subumbellate.

A large genus, with about 130 species in the Pacific Islands, the East Indies, Asia, and Africa, rare in Australia, 18 in eastern Asia.

Key to the eastern Asiatic species of Embelia.

a^1. Flowers in paniculate inflorescences.
  b^1. Inflorescences terminal, pubescent ..... §. *Euembelia.*
    c^1. Flowers pediceled; branches of panicle rarely over 10 cm long, not pliant ..... 1. *E. sessiliflora.*
    c^2. Flowers sessile or nearly so; branches of panicle up to 25 cm long, slender, pliant ..... 2. *E. ribes.*
  b^2. Inflorescences lateral (rarely terminal), glabrous. § *Embeliopsis*—3. *E. floribunda.*
a^2. Flowers not in paniculate inflorescences.
  b^1. Inflorescences not scaly at base, racemose, the axis elongate, not less than 1 cm long ..... § *Heterembelia.*
    c^1. Leaves 15 cm long or longer, the veinlets impressed above with characteristically raised marginal leaf tissue; anthers large, the filaments more or less inconspicuous ..... 4. *E. Gamblei.*
    c^2. Leaves not over 14 cm long, veinlets not impressed above with characteristically raised marginal leaf tissue; anthers relatively small, the filaments distinct.
      d^1. Anthers punctate on back; leaf blades with about 10 pairs of lateral nerves prominent on upper surface, the veinlets not reticulate ..... 5. *E. scandens.*
      d^2. Anthers not punctate on back except in *E. rudis;* leaf blades with numerous fine lateral nerves, or if with as few as 10 these not prominent on upper leaf surfaces, the veinlets reticulate or not reticulate.
        e^1. Veinlets prominently raised-reticulate, leaves finely or rather coarsely but closely serrate; anthers black-punctate on back. 6. *E. rudis.*

e^2. Veinlets not prominently raised-reticulate, leaves variously serrate; anthers not punctate on back.

f^1. Leaves finely and closely serrate ..... 7. *E. vestita.*

f^2. Leaves rather remotely serrate.

g^1. Leaves with about 10 pairs of prominent lateral nerves beneath, alternating with finer nerves; sepals generally very broadly ovate or rhomboidal, generally rounded at apex and narrower at base; fruit 7 to 8 mm in diameter ..... 8. *E. oblongifolia.*

g^2. Leaves with numerous fine nerves beneath; sepals ovate or triangular, not broadly so, acute; fruit about 5 mm in diameter ..... 9. *E. lenticellata.*

b^2. Inflorescences more or less scaly at base, the scale sometimes not evident, generally umbellate, subumbellate, cymose, or corymbose, the main axis shortened, not over 1 cm long, (except in *E. subcoriacea* with racemose inflorescences and axis up to 6 cm long).

§ *Micrembelia.*

c^1. Flowers 5-merous.

d^1. Leaf blades over 10 cm long, entire, not distichous.

10. *E. aberrans.*

d^2. Leaf blades under 10 cm long, serrate, or if entire, the leaves distichous.

e^1. Leaves distichous.

f^1. Margin of leaves entire ..... 11. *E. parviflora.*

f^2. Margin of leaves crenate ..... 12. *E. polypodioides.*

c^2. Leaves not distichous.

f^1. Stems pilose; leaves subverticillate on short lateral branches; petals united at least half their length.

13. *E. procumbens.*

f^2. Stems puberulent or glabrous; leaves scattered along normal branches; petals united only at base.

g^1. Leaves 3 cm long or less ..... 14. *E. Henryi.*

g^2. Leaves 4 cm long or longer.

h^1. Leaves broadly lanceolate or ovate.

15. *E. pauciflora.*

h^2. Leaves narrowly oblong-lanceolate.

15*a*. *E. pauciflora* var. *Blinii.*

c^2. Flowers 4-merous.

d^1. Leaves 7 cm long or longer, the lateral nerves more or less prominent; sepals generally ciliate or papillose; fruit 8 mm in diameter or larger.

e^1. Inflorescences 1 cm long or less; eastern ..... 16. *E. longifolia.*

e^2. Inflorescences 3 to 5 cm long; western ..... 17. *E. subcoriacea.*

d^2. Leaves mostly 6 cm long or less, the lateral nerves very inconspicuous; sepals not ciliate; fruit about 5 mm in diameter.

18. *E. laeta.*[59]

[59] *E. longifolia* and *E. laeta*, both eastern species, are best differentiated in flower by the oblong, black-punctate anthers of the former, contrasted with the ovate to reniform, not at all or very indistinctly punctate anthers of the latter.

SECTION EMBELIA CLARKE

Scandent shrubs or vines with terminal, paniculate, many-flowered inflorescences; flowers 5-merous.

1. EMBELIA SESSILIFLORA Kurz.

Embelia sessiliflora KURZ, Journ. Asiat. Soc. Bengal 40[2] (1871) 66. Based on Dr. Brandis's collection from Pegu (Karen Hills), Burma. The type has not been seen.

Ribesioides sessiliflorum KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Embelia sessiliflora* Kurz, erroneously attributed to Miquel.

A scandent shrub or vine 3 to 5 m long, the branches slender, brownish, minutely puberulent when young, becoming glabrous; leaves petiolate (up to 1 cm), the blade chartaceous, elliptic- or oblong-ovate, obtuse or rounded and wrinkled-decurrent on petiole at base, obtuse or obtusely acuminate at apex, 6 to 12 cm long, 2.5 to 4 cm wide, entire with recurved edge, dull green above, paler beneath, not punctate, glabrous, the midrib prominent, the lateral nerves inconspicuous; inflorescences terminal, tripinnately paniculate, leafy at base, many-flowered, 15 to 30 cm long, the branches long, slender, pliant, spikelike, generally densely puberulent throughout; flowers sessile or nearly so, greenish or white, 5- rarely 4-merous, 1 to 2 mm long, the subulate bracts equaling or longer than calyx; sepals united about half their length, minute, the lobes triangular, acute, ciliate, papillose; petals free, elliptic or oblong, acute or rounded, about 1 mm long, puberulent on back, densely papillose on margin and within; stamens attached about middle of petals and nearly equaling them, the filaments slender, the anthers ovoid or oblong, equaling filaments, with or without wartlike glands on back, the cells divaricate; pistil much reduced in male flowers, in female flowers with ovoid, glabrous ovary, the style short, slender, the stigma capitate, peltate, or obscurely lobed; fruit sessile, globose, 3 mm in diameter, crowned by the persistent style, reddish, glabrous, wrinkled.

Burma, Manipur, Siam, and southwestern China.

YUNNAN: *Forrest 9820 (A, E); Henry 11680 (A, W, Y), 11680A (A); Rock 2644 (W), 2679 (A, C, W); H. T. Tsai 55595, (A, W), 55624 (A, W), 55690 (A, W), 55767 (A, W), 55778 (A, W), 55841 (A, W), 56456 (A, W), 56797 (A, W); Y. Tsiang 12635 (Su); C. W. Wang 71883 (A, W), 72169 (A, W), 72635 (A, W), 72807 (A, W), 73872 (A, W), 75092 (A. W).*

This species with terminal paniculate inflorescences may be recognized by the long spikelike branches with sessile or nearly sessile flowers.

2. EMBELIA RIBES Burm. f.

Embelia ribes BURM. f., Fl. Ind. (1768) 62, *pl. 23*. This is the type species of the genus traced back into pre-Linnæan literature without definite specimens.

Ribesioides ribes KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Embelia ribes* Burm. f.

A scandent shrub or vine 3 to 6 m long or up to 9 m (*ex Forrest 17702*), the branches slender, glabrous, the bark grayish brown; leaves petiolate (5 to 10 mm), the blade coriaceous or chartaceous, obovate or oblong elliptic or elliptic-lanceolate, cuneate or rounded and wrinkled-decurrent at base, generally obtusely acuminate at apex, 5 to 8 cm long, 1.5 to 2.5 or rarely 3 cm wide, entire with recurved edge, light green above, bluish and punctate or obscurely so beneath, generally glabrous, the midrib prominent, the lateral nerves obscure; inflorescences terminal, 3 to 4, pinnately paniculate, more or less leafy, many-flowered, 10 to 20 cm long, the branches at first ascending, later generally spreading at right angles with rachis, more or less densely papillose or puberulent throughout; flowers greenish or white, 5- rarely 4- merous, 1 to 2 mm long, on pedicels of equal length, these becoming up to 4 mm long in fruit; sepals united about half their length, minute, the lobes triangular, acute or obtuse, ciliate, papillose, obscurely punctate; petals free, elliptic or oblong, acute, about 1 mm long, sparingly puberulent on back, densely papillose on margin and within; stamens attached to middle of petals in male flowers, lower in female flowers, shorter than petals, the filaments slender, the anthers ovoid or oblong, about equaling filaments, glandular-warty on back, the cells divaricate; pistil in male flowers reduced, stigma peltate or obscurely lobed in female flowers with ovoid glabrous ovary, the style short, rarely equaling petals, the stigma capitate; fruit pediceled, lobose, 2 to 3 mm in diameter, generally crowned by persistent style and stigma, reddish or bluish black, glabrous, wrinkled.

Southeastern Asia from Ceylon and further India to Sumatra, Java, and Borneo, northward to southern China.

FUKIEN: *Chung 973* (*A, Am, C*).

HONGKONG: *C. C. C. 16509* (*C, NA, W*); *W. Y. Chun 6818* (*C*), *6862* (*C*); *Ford*, January 12, 1893 (*W*) and March 21, 1893 (*A*); *Hance 479* (*G*); *Y. Tsiang 283* (*A*); *Wright 202* (*U. S. Nat. Herb. 44589*).

HAINAN: *C. C. C. 7948* (*A, NA*), *8402* (*C, NA, W*), *8982* (*NA, W*), *9660* (*NA, W*), *15680* (*A, C, NA, W*), *16862* (*A, C, W*); *N. K. Chun & C. L. Tso 44381* (*Y*), *44758* (*W, Y*); *H. Fung*

20165 (*A, W, Y*); *Gressitt 991* (*A*); *F. C. How 71640* (*A*), *73161* (*A*); *F. C. How & N. K. Chun 70101* (*W, Y*); *S. P. Ko 52291* (*Y*); *S. K. Lau 1534* (*A, Y*), *2905* (*A*), *3192* (*A*), *3478* (*A*), *5127* (*A, W*), *6147* (*A, W*), *28389* (*A, W*); *C. I. Lei 240* (*A, Y*), *372* (*A, Y*); *H. Y. Liang 61666* (*A, Y*), *64061* (*W, Y*), *64545* (*W, Y*), *64663* (*W, Y*), *64937* (*W, Y*), *65088* (*W, Y*); *Nanking, Herb. Univ. 5603* (*C*), *5734* (*C, NA*), *5945* (*A, C, NA, W*), *6816* (*C*); *C. Wang 35462* (*W, Y*).

KWANGTUNG: *C. C. C. 690* (*A, Br, G, M, NA*), *3240* (*M, NA*), *3611* (*Y*), *13352* (*C, NA*), *14414* (*C, NA*), *14695* (*C, NA*), *18914* (*Y*); *W. Y. Chun 6384* (*A, C*); *H. T. Ho 60028* (*Y*); *S. Y. Lau 20216* (*Y*); *W. T. Tsang 20034* (*A, Y*), *28547* (*A, W*), *28769* (*A, W*); *Y. Tsiang 81* (*A, C*), *1638* (*A*), *1742* (*A*), *1759* (*A*), *2103* (*Y*); *C. L. Tso 20451* (*Y*), *20719* (*Y*); *T. M. Tsui 121* (*A*), *335* (*W*), *356* (*W*); *Y. K. Wang 353* (*A*), *1856* (*C*).

KWANGSI: *Chiang 5584* (*A, W, Y*), *7044* (*A, W, Y*), *8443* (*A, W*); *S. P. Ko 55579* (*A*); *Steward & Cheo 574* (*A, W*); *W. T. Tsang 21967* (*A, W*), *22383* (*A, W*), *23139* (*A*), *23898* (*A*), *24395* (*A*), *24691* (*A*).

YUNNAN: *Forrest 7511* (*A, E*), *8010* (*A, E*), *8137* (*A, E*), *9375* (*A, E*), *17702* (*A*), *24462* (*W*); *Henry 10690* (*A*); *H. T. Tsai 52444* (*A*), *52488* (*A*), *52491* (*A*), *53170* (*A*), *55094* (*A*), *55200* (*A*), *55492* (*A*), *56358* (*A*), *56664* (*A, W*), *57116* (*A, W*), *60256* (*A*), *60403* (*A*), *60455* (*A*), *60737* (*A*), *61422* (*A*), *61672* (*A*), *61945* (*A*), *62101* (*A*), *62227* (*A*), *62345* (*A*); *C. W. Wang 78264* (*A, W*).

This species may be readily recognized by its terminal, paniculate inflorescences with distinctly pediceled flowers.

Section EMBELIOPSIS Mez [60]

Scandent shrubs or vines with usually lateral paniculate many-flowered inflorescences; flowers 5-merous.

3. EMBELIA FLORIBUNDA Wall.

Embelia floribunda WALL. in Roxb., Fl. Ind. ed. Carey 2 (1824) 291, Probably based on *Wallich 2305.*(62; 8, p. 84) This specimen has not been seen.

Ribesiodes floribundum KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Embelia floribunda* Wall.

A scandent shrub or vine up to 5 m long, the branches long, slender, pendulous, the bark grayish brown, scabrous from abun-

[60] This section is not easily distinguished from the preceding in the few cases where the inflorescences are terminal.

dant lenticels or smooth on youngest parts, glabrous; leaves with narrowly winged petiole 10 to 12 mm long, the blade subcoriaceous, lanceolate or oblong-lanceolate, rounded at base, slenderly acuminate at apex, 7 to 13 cm long, 2 to 3.5 cm wide, entire, subrevolute on thin margin, dark shining green above, scarcely paler beneath especially when dry, punctate especially near apex and beneath margin, glabrous, the midrib prominent, the lateral nerves numerous, very inconspicuous; inflorescences terminal or axillary, twice paniculate, 7 to 11 cm long, the branches racemose, minutely puberulent, glabrescent, the bracts subulate; flowers yellowish green, 5-merous, 2 mm long or less, on rather thick, wrinkled pedicels of about equal length; sepals shortly united at base, minute, about 0.5 mm long, the lobes ovate or triangular, acute, thickened and glandular-punctate in middle, thin or subscarious on entire or ciliate margin; petals free, lanceolate or oblanceolate, about 1.5 mm long, strongly spreading or recurved, glabrous on back, densely papillose on margin and within; stamens equaling or longer than petals, the filaments slender, united with petals about $\frac{1}{4}$ their length, the anthers minute, ovoid, not punctate on back; pistil with globose or obpyriform ovary, the style slender, the stigma apiculate; fruit globose, apiculate, usually about 4 mm in diameter, reddish, smooth or reticulate-wrinkled.

Southern Asia from Nepal to Yunnan.

YUNNAN: *Forrest 1065* (*E, Y*), *7523* (*E*), *7816* (*E*), *9406* (*A, K, Y*), *9570* (*A, E*), *9664* (*A, E*), *12126* (*W*), *16164* (*A, E, Y*), *17846* (*E*), *17875* (*A, E*), *24423* (*W*), *25333* (*W*), *26904* (*E*), *26160* (*W*), *29367* (*W*), *29794* (*E*); *Rock 7264* (*A, C, W*), *7690* (*A, C, W*), *7711* (*A, W*), *7713* (*A, C, W*), *7892* (*A, C, W*); *Schneider 3787* (*A*); *H. T. Tsai 54503* (*A*), *54662* (*A*), *54811* (*A, W*), *54818* (*A, W*), *54824* (*A, W*), *54865* (*A, W*), *54903* (*A*), *55028* (*A, W*), *55501* (*A*), *56421* (*A*), *56479* (*A, W*), *56497* (*A*), *56638* (*A*), *58760* (*A*), *58791* (*A*).

This species may be recognized by its usually lateral, paniculate, glabrous inflorescences.

Section HETEREMBELIA

Scandent shrubs or vines (rarely trees?), the inflorescences axillary, racemose, the axes not less than 1 cm long, not rising from scaly bases; the flowers normally 5-merous, sometimes reduced to 4-merous, the petals free or united only at base.

4. EMBELIA GAMBLEI Kurz.

Embelia Gamblei KURZ in C. B. Clarke, in Hook. f. Fl. Brit. Ind. 3 (1882) 516. Based on Griffith (Kew Distrib. *no. 3544*) from Sikkim, altitude 6000 to 9000 feet. The type has not been examined.
Ribesiodes Gamblei KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Embelia Gamblei* Kurz.

Generally a climbing or scandent shrub, up to 8 m, the branches thick, brownish gray, more or less ferruginous-tomentose at apex, becoming glabrous; leaves petiolate (1.5 to 2 cm), the blade subcoriaceous, ovate or obovate to elliptic or broadly oblong-lanceolate, subrounded or cuneate at base, generally acute or sometimes obtuse at apex, 15 to 30 cm long, 5.5 to 9 cm wide, entire, the upper surface of mature leaves dull green, conspicuously reticulate-corrugate, the veinlets impressed, the tissue along veinlets elevated, paler and raised-reticulate beneath, generally thickly covered with small glandular punctations, the midrib prominently raised and sometimes fuscous-tomentose beneath, the lateral nerves about 20 pairs, curved-ascending, impressed above, raised beneath; inflorescences lateral, racemose, 2.5 to 4 cm long, fuscous-puberulent, glabrescent, the bracts narrowly lanceolate, about 3 mm long, the pedicels 2 to 4 mm long; flowers dull olive-green,[61] 5- sometimes 4-merous, 2 to 3 mm long; sepals shortly united at base, the lobes ovate, rounded or acute, 1 to 1.5 mm long, ciliate, abundantly reddish-glandular-punctate, glabrous; petals almost free, imbricate in bud, elliptic or obovate, 2.5 mm long, glabrous outside, obscurely and minutely puberulent within, densely ciliate on margin, abundantly punctate; stamens attached at base of petals, the filaments about 0.5 mm long, flattened, the anthers ovate, cordate or deeply lobed at base, subacute at apex, not punctate on back; pistil in male flowers much reduced, flask-shaped, about equaling sepals, unknown in female flowers; fruit globose, about 3 mm in diameter, apiculate from the persistent style, dark reddish, black-punctate, more or less reticulate-wrinkled.

Sikkim-Himalaya to southwestern China.

YUNNAN: *Forrest 6099* (*A?*), *17632* (*W*), *18537* (*E*), *24213* (*E*), *24469* (*E*), *25660* (*W*), *25839* (*W*), *26654* (*E, W*), *29600* (*W*); *Rock 17086* (*W, Y*); *H. T. Tsai 54480* (*A, W*).

This species is readily distinguished by its relatively large leaves with very distinctively reticulate upper surfaces.

[61] *Forrest 17632* gives the flowers as yellowish crimson.

5. EMBELIA SCANDENS (Lour.) Mez.

Calispermum scandens LOUR., Fl. Cochinch. (1790) 156; ed. Willd. (1793) 194. Described from forests in Cochin China. Merrill (40, p. 229) has discussed the type in the herbarium of the British Museum.

Embelia scandens MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 317. Based on *Calispermum scandens* Lour. The nomenclature of this species has been discussed by Walker.(59)

Embelia hainanensis MERR., Philip. Journ. Sci. 27 (1925) 166. Based on *K. K. Tsoong 2713* from Hainan, without definite locality, in the herbarium of the University of California.

A scandent shrub, the branchlets slender, glabrous, the bark grayish, more or less densely lenticellate-warty; leaves petiolate, the petiole about 8 mm long, channeled above, the blade chartaceous, elliptic-ovate to elliptic-lanceolate, rounded to acute at base, obtuse or acute at apex, 5 to 9 cm long, 2.5 to 4 cm wide, entire or remotely serrate, shining above, slightly paler beneath, punctate especially toward apex, glabrous, the midrib prominently raised beneath, the lateral nerves rather prominent, about 10 pairs, the veinlets not conspicuously reticulate; inflorescences axillary, racemose, 1 to 5 cm long, more or less fuscous or glandular-pubescent, the pedicels 1 to 2 mm long, generally forming an acute angle with the rachis, the bracts minute, subulate, more or less pubescent, punctate; flowers whitish, 4- or 5-merous, minute, about 1.5 mm long; sepals shortly united at base, the lobes triangular-ovate, acute, entire or subciliate, glandular-punctate, glabrous; petals free, 2 or 3 times length of sepals, elliptic- to oblong-lanceolate or ovate, rounded or obtuse, glabrous outside, minutely papillose within, rather strongly punctate; stamens in male flowers attached near base of petals and exceeding them in length, the filaments slender, the anthers broadly ovoid, rounded or obtuse, generally clearly but sometimes obscurely glandular-punctate on back; pistil in male flowers reduced, unknown in female flowers; fruit globose, about 5 mm in diameter, the persistent sepals generally reflexed at base.

Indo-China and southern China.

HAINAN: *N. K. Chun & C. L. Tso 44541* (*A, W, Y*), *44789* (*A, Y*); *W. Y. Chun 5962* (*C*); *S. K. Lau 1103* (*A, Y*), *1727* (*A, Y*), *3307* (*A*), *5014* (*A, W*), *28257* (*A*); *H. Y. Liang 61883* (*W, Y*); *K. K. Tsoong 2713* (*C*).

KWANGTUNG: *C. C. C. 3997* (*Y*).

KWANGSI: *Ching 5372* (*W*), *6397* (*Su, V, Y*); *W. T. Tsang 21934* (*A, W*).

This species may generally be recognized by its axillary, racemose inflorescences without scaly bases, its ovate leaves with about 10 pairs of lateral nerves visible on the upper surface, the veinlets beneath not evidently reticulate, and its punctate anthers.

6. EMBELIA RUDIS Hand.-Mazz.

Embelia rudis HAND.-MAZZ., Anzeig. Akad. Wiss. Wien Math. Naturw. 59 (1922) 108. Based on a collection by Wang-te-hui (*Handel-Mazzetti 157*) from Ping-hsiang, Kiangsi, and on *Mell 645* from Tsatmuknggao, near Lien-ping, Kwangtung, both in the Vienna herbarium. Duplicates have been examined.

A much branching, climbing shrub, the branches rather stiff, usually densely brownish and warty on previous year's growth, glabrous; leaves petiolate, the petiole 6 to 10 mm long, thick, channeled above, narrowly warty-margined, glabrous or minutely fuscous-puberulent, the blade coriaceous, generally ovate, sometimes oblong or rarely lanceolate, rounded or obtuse at base, acute or acuminate at apex, 5 to 10 cm long, 2 to 4 cm wide, finely or more coarsely and closely single- or double-serrate or subentire, brownish or olive-green and shining above when dry, slightly paler beneath, punctate, glabrous, the midrib prominently raised beneath, the lateral nerves numerous, the veinlets prominently raised-reticulate, only slightly more prominent below than above; inflorescences axillary, racemose, 1 to 2 cm long, fuscous-puberulent, the pedicels slender, 2 to 3 mm long, the bracts subulate, about 1 mm long; flowers greenish or white, 5-merous, minute, 1 to 2 mm long; sepals shortly united at base, the lobes ovate, acute, ciliate, glabrous or sometimes pubescent on tube, sparingly punctate; petals free, ovate to oblong or elliptic, obtuse or rounded, glabrous outside, densely puberulent or papillose within especially toward base, abundantly black-punctate; stamens somewhat reduced in female flowers, about $\frac{3}{4}$ length of petals in male flowers, the filaments slender, anthers black-punctate on back; pistil in female flowers with pyriform ovary, the style slender, equaling or slightly longer than petals, the stigma apiculate or slightly spreading; fruit globose, about 5 mm in diameter, reddish to bluish black, punctate or obscurely so, the sepals more or less persistent.

Southern China and Formosa.

FORMOSA: *Gressitt 226* (*Y*);[62] *Wilson 11203* (*A*, *W*).

[62] This specimen comes from Lake Candidius, the locality in which Wilson collected his *no. 11203*.

CHEKIANG: *Ching 2050* (*A, C*), *2069* (*A, C*); *Y. L. Keng 397* (*A*).

KIANGSI: *Gressitt 1585* (*A*); *Handel-Mazzetti 157* (*A*); *H. H. Hu 1133* (*A*); *S. K. Lau 4779* (*A, W*); *Y. Tsiang 10598* (*Y*).

FUKIEN: *Ching 2275* (*A, C, W*); *H. H. Chung 3094* (*Am, C*), *3359* (*A, Am*), *6422* (*A, Y*); *Fukien Christ. Univ. 2544* (*C*), *2591* (*C*); *Hongkong Bot. Gard., Herb. 2893* (*A*)?

HONGKONG: *C. C. C. 16567* (*A, C, NA, W, Y*).

KWANGTUNG: *C. C. C. 1357* (*A, Br, G, NA, W, Y*), *6608* (*NA*), *12362* (*C, NA, W*), *14036* (*NA*), *14064* (*C, NA*), *15041* (*C, NA*); *W. Y. Chun 5579* (*A*), *5628* (*C*); *S. P. Ko 52559* (*A*); *Mell 645* (*A*); *Merrill 11020* (*C, NA*); *S. S. Sin 9182* (*Y*), *11520* (*Y*); *W. T. Tsang 20698* (*W, Y*), *24919* (*A*), *25046* (*A*); *Y. Tsiang 1465* (*A, C*); *T. M. Tsui 837* (*W, Y*).

KWANGSI: *C. Wang 39206* (*A, W*), *40445* (*A*), *40661* (*A*), *41128* (*A, W*).

KWEICHOW: *Steward, Chiao & Cheo 546* (*A, Y*), *805* (*A, W, Y*); *Y. Tsiang 4561* (*A, W, Y*), *4567* (*W*), *6291* (*Y*).

SZECHWAN: *W. P. Fang 5613* (*A*), *5655* (*A*).

This species with racemose axillary inflorescences may be rather easily distinguished by its thick leaves, with finely reticulate and somewhat whitish raised veinlets beneath, and by its black-punctate anthers.

Most specimens of this species have previously been erroneously determined as *Embelia oblongifolia* Hemsl., possibly because of the accidental designation of *Merrill 11020* in the herbarium of the University of California, collected on Loh Fau Mountain, Kwangtung, as a topotype of *E. oblongifolia*.

7. EMBELIA VESTITA Roxb.

Embelia vestita ROXB., Fl. Ind. ed. Carey 2 (1824) 288. Described from Silhet. No specimens are cited, but Wallich's observations refer to specimens collected by Mr. Smith in Silhet. DeCandolle[8, p. 86] cites "Wall. list *n. 2306* Deless. Ic. v. 5, ined."[63] Mez cites *2305* [a] and *2306*.[a] Photographs of two specimens of *Wallich 2306* in the Delessert herbarium at Geneva and of two other specimens annotated and cited by Mez have been examined.

Ribesiodes vestitum KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Embelia vestita* Roxb.

Embelia prunifolia MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 316. Based on *Henry 9380, 9380C, 10260, 11327A* and *11327B* from Yunnan in the Berlin herbarium. Duplicates have been examined.

[63] This illustration appears as plate 30 in volume 5 of B. Delessert, Icones Selectae Plantarum.

Comparison of *Henry 9380* with photographs of *Wallich 2806* from Geneva, with Mez's illustration of *E. vestita* (*see* his *fig. 51*), and with descriptions by Delessert, Roxburgh, and Mez leave no doubt that these are the same. The recognition of this synonym was made subsequent to the writer's treatment of this species in 1931. (59)

A climbing shrub or small tree up to 5 m high [*ex Rock 7585, 7890*]. Branches slender, glabrous or very minutely fuscous-puberulent when young, the bark grayish or brownish, more or less lenticellate-warty; leaves petiolate, the petiole 4 to 8 mm long, grooved above, somewhat wrinkled or warty-margined, the blade chartaceous, ovate to ovate-oblong or elliptic-lanceolate, rounded or obtuse at base, acute or acuminate at apex, 5 to 11 cm long, 2 to 4.5 cm wide, usually finely serrate mostly above middle but sometimes below, often doubly serrate, shining above, paler beneath, punctate with rather large glands, glabrous, the midrib prominently raised beneath, the lateral nerves fine, numerous, the veinlets not conspicuously raised-reticulate and whitish above; inflorescences axillary, racemose, 2 to 6 cm long, fuscous-puberulent, the pedicels 2 to 5 mm long, forming a right angle with the rachis, the bracts minute, subulate; flowers whitish or pink, 5-merous, minute, about 2 mm long; sepals shortly united at base, the lobes ovate, acute or obtuse, ciliate, glabrous, not punctate or sparingly so; petals free, narrowly oblong or elliptic to ligulate or spatulate, rounded, sparingly pubescent or glabrous outside, densely papillose within especially toward base, punctate; stamens in female flowers reduced, in male flowers longer than petals, attached near base, the filaments slender, the anthers ovoid or oblong, rounded, not punctate on back, the cells divaricate, dehiscing by pores above or by longitudinal openings; pistil in male flowers with ovoid, glabrous ovary, the style slender, reaching about apex of petals, the stigma slightly swollen or capitate; fruit globose or somewhat depressed, apiculate, about 5 mm in diameter, reddish, more or less punctate, sepals persistent, reflexed at base.

Southwestern China to India.

YUNNAN: *Forrest 821* (*E*), *7357* (*E*), *7527* (*E*), *7966* (*E*), *8781* (*A, E*), *9256* (*A, E*), *9311* (*E*), *9355* (*A, E*), *12090* (*E, W*), *12102* (*E, W*), *15950* (*A, E*), *17223* (*E*), *19271* (*E*), *27982* (*E*), *28049* (*E*), *28995* (*E*); *Henry 9380* (*A, W, Y*), *9380C* (*A*), *10260* (*A, M, Y*), *11327* (*A, W, Y*), *11327A* (*A*), *11327C* (*A*); *Rock 6879* (*A, W*), *7585* (*A, C, W*), *7671* (*A, C, W*), *7870* (*A,*

C, W), 7890 (A, C, W); H. T. Tsai 51472 (A); K. K. Tsoong 2497 (C).

This species with racemose axillary inflorescences can be recognized by its finely and closely serrate leaves and its nonpunctate anthers.

8. **EMBELIA OBLONGIFOLIA Hemsl.**

Embelia oblongifolia HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 62. Based on *Ford* [*90*] from Loh Fau Mountain, Kwangtung, in the Kew herbarium. A photograph has been examined.

Ribesiodes oblongifolium KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Embelia oblongifolia* Hemsl.

Embelia Bodinieri LÉVEILLÉ, Repert. Sp. Nov. Fedde 9 (1911) 327. Based on *J. Esquirol 743* from Kweichow in the Léveillé herbarium. A fragment of the type has been examined.

A scandent shrub or vine up to 10 m long, the branchlets slender, glabrous or puberulent when young, the bark gray or brown, more or less lenticellate-warty; leaves petiolate, the petiole about 5 mm long, grooved above, somewhat crinkled or warty-margined, the blade chartaceous, oblong-ovate to elliptic-lanceolate, rounded at base, acute or rarely subacuminate at apex, 6 to 9 cm long, 2 to 3.5 cm wide, usually remotely serrate above middle, sometimes entire, dull green above, paler beneath, inconspicuously punctate, glabrous, the midrib prominently raised beneath, the lateral nerves about 20 pairs, usually the stronger nerves alternating with distinctly finer and inconspicuous nerves, the veinlets reticulate but not conspicuously raised-reticulate and whitish above; inflorescences axillary, racemose, 1 to 3 cm long, fuscous-puberulent, the pedicels 2 to 3 mm long, usually forming a right angle with rachis, the bracts minute, subulate; flowers greenish or white, 5-merous, minute, 2.5 to 3 mm long; sepals shortly united at base, generally very broadly ovate, rounded, rarely obtuse or acute, ciliate, glabrous or nearly so, not distinctly punctate; petals free, oblong to elliptic-lanceolate, rounded or obtuse, glabrous outside, densely papillose within especially toward base, punctate; stamens in female flowers reduced, in male flowers about equaling petals, attached near their base, filaments slender, the anthers ovoid or oblong, rounded, not punctate on back, the cells divaricate, dehiscing by longitudinal openings; pistil in male flowers greatly reduced or wanting, in female flowers with pyriform glabrous ovary, style slender, reaching about apex of petals, the stigma sligthly swollen or capitate; fruit globose, 7 to 8 mm in diameter, reddish, more or less punctate, the sepals persistent, not reflexed.

Southern and southwestern China.

HONGKONG: *N. K. Chun 40136* (*Y*), *40138* (*Y*).

HAINAN: *C. C. C. 8482* (*A, NA*), *9540* (*C, NA, W, Y*), *15886* (*A, C, NA, W, Y*), *16418* (*A, C, NA, W, Y*); *N. K. Chun & C. L. Tso 43493* (*A, Y*), *44397* (*A, W, Y*); *F. C. How 73335* (*A, W*); *S. K. Lau 5429* (*A, W*), *25464* (*A, W*), *25710* (*A, W*), *26059* (*A, W*), *28275* (*A, W*); *C. I. Lei 754* (*W, Y*); *H. Y. Liang 64051* (*W, Y*), *64099* (*W, Y*), *64317* (*W, Y*), *65077* (*W, Y*), *65078* (*W, Y*), *65168* (*W, Y*); *Nanking, Herb. Univ. 5962* (*C*), *6361* (*C*); *C. Wang 35735* (*W, Y*), *36089* (*W, Y*), *36108* (*A, W, Y*).

KWANGTUNG: *C. C. C. 6964* (*C, NA, W, Y*); *Y. F. Chun 30434* (*Y*); *Ford 90* (*A, Y*); *S. K. Lau 820* (*A, Y*), *870* (*A, Y*); *Y. Tsiang 1683* (*A, C, Y*); *C. L. Tso 20384* (*Y*); *Y. K. Wang 1860* (*C, W, Y*).

KWANGSI: *Ching 6506* (*W*), *7660* (*A, W, Y*); *Steward & C. C. Cheo 580* (*A, Y*), *841* (*A, Y*); *W. T. Tsang 22184* (*A, W*), *23318* (*A, W*), *24586* (*A*); *C. Wang 40410* (*A*).

KWEICHOW: *Esquirol 726* (*A*), *743* (*A*).

YUNNAN: *Henry 9380A* (*Y*), *9380B* (*A, W*), *9380D* (*A*), *11394* (*A*), *11394A* (*A, W*), *12776* (*A*), *12776A* (*A*), *12776B* (*A*); *Rock 2463* (*A, C, W*); *H. T. Tsai 51535* (*A, W*), *51587* (*A, W*), *51615* (*W*), *51714* (*A*), *51832* (*A, W*), *51878* (*A*), *52548* (*A, W*), *52607* (*A, W*), *53214* (*A, W*), *55160* (*A*), *60292* (*A*), *60554* (*A*), *60596* (*A, W*), *60647* (*A*), *61479* (*A*), *61678* (*A*); *C. W. Wang 73821* (*A, W*), *73914* (*A, W*), *74999* (*A, W*), *75001* (*A, W*), *75984* (*A, W*), *76886* (*A, W*), *77504* (*A, W*), *80667* (*W*), *80836* (*A, W*), *81025* (*A*)?

This species with racemose axillary inflorescences may be recognized by its remotely serrate, oblong-ovate leaves, with about 10 pairs of rather prominent lateral nerves beneath alternating with finer ones, its broadly ovate or rhomboidal sepals, and its nonpunctate anthers.

9. EMBELIA LENTICELLATA Hayata.

Embelia lenticellata HAYATA, Icon. Pl. Formosa 5 (1915) 86. Based on *U. Mori 3465* from Siuriko-Nanto, Formosa, and *1841* from Bunshiseki, Taito, Formosa, both probably in the herbarium of the Imperial University of Tokyo. These specimens have not been examined.

A scandent shrub, the branchlets slender, minutely fuscous-glandular or puberulent when young, the bark brownish, densely lenticellate; leaves petiolate, the petiole about 1 cm long, channeled above, narrowly crisped-margined, glabrous or fuscous-puberulent, the blade chartaceous, narrowly ovate or lanceolate,

obtuse at base, acuminate at apex, about 9 cm long, 2.5 cm wide, remotely and obtusely serrate above middle or almost entire, dull green above, paler beneath, more or less punctate, glabrous or sometimes pubescent on prominently raised midrib beneath, the lateral nerves fine, numerous, the veinlets minutely reticulate but not prominently so; inflorescences axillary, racemose, 1.5 to 3.5 cm long, fuscous-puberulent throughout, the pedicels slender, about 3 mm long, the bracts subulate, about 1 mm long; flowers greenish, 5-merous, minute, about 2 mm long; sepals shortly united at base, the lobes ovate or triangular, acute, ciliate, generally fuscous-puberulent, glandular-punctate; petals free, oblong-ovate to elliptic-lanceolate, obtuse or rounded at apex, entire, glabrous outside, densely puberulent or papillose within, abundantly brownish-punctate; stamens in female flowers reduced, in male flowers equaling or longer than petals, attached near base, the filaments slender, the anthers reniform or suborbicular, not punctate on back, minutely apiculate; pistil in male flowers much reduced, in female flowers with pyriform, glabrous ovary, the style slender, about equaling petals, generally curved, glandular-punctate, the stigma apiculate or slightly enlarged; fruit globose, 5 mm in diameter or less, glabrous, the persistent sepals more or less reflexed at base.

FORMOSA: *Formosa, Herb. Gov't. 21776* (*C, W*); *Wilson 10865* (*A, W*).

This species, known only from Formosa, may be recognized by its racemose axillary inflorescences, its leaves with remotely serrate margins and numerous lateral nerves beneath, all of about equal prominence, its ovate or triangular sepals, and its anthers not punctate.

Section MICREMBELIA Mez

Scandent shrubs or climbing, twining or rarely procumbent vines, the inflorescences axillary, short-racemose or subumbellate, axes not over 1 cm long, more or less scaly at base; flowers 4- or 5-merous, the petals free or united only at base, rarely united more than half their length.

10. EMBELIA ABERRANS Walker. Text fig. 32.

Embelia aberrans WALKER, Bull. Fan Mem. Inst. Biol. 9 (1939) 173, *pl. 22.* Based on *H. T. Tsai 61555*, collected in woods in Ping-pien Hsien, Yunnan, in the U. S. Nat. Herb.

A vine or shrub 3 m high, the branches slender, minutely fuscous-puberulent; leaves petiolate (6 mm), the blade chartaceous, elliptic or oblong-lanceolate, acute at base, acuminate at apex, 17

FIG. 32. *Embelia aberrans* Walker. *a*, branchlet with inflorescences, × ½; *b*, verp immature fruit, partially dissected, × 7½; *c*, inflorescence, × 1½. Drawn from the type, *H. T. Tsai 61555* (*W*).

to 22 cm long, 5 to 7 cm wide, entire, brownish green above, paler and abundantly and minutely punctate beneath, glabrous, the midrib much raised and puberulent beneath, the lateral nerves about 22 pairs, prominent, slightly curved-ascending, not uniting in a marginal nerve, the veinlets reticulate, those on margin ending in a resinous gland; inflorescences axillary, obscurely scaly at base, cymose, 1 cm long, puberulent, the bracts minute, ovate, the pedicels 2 to 3 mm long; sepals 5, shortly united at base, 1 mm long, ovate, acute, ciliate, puberulent; petals and stamens unknown; pistil 4 mm long, the ovary ovoid, the style rather thick with a more or less flattened top from which rises the slender apiculate stigma 3 mm long; fruit globose to flask-shaped, apiculate from persistent style, 5 mm long, "yellowish orange" [*ex* Tsai], glandular-striate.

YUNNAN: *H. T. Tsai 61555* (*A, W*).

This aberrant species differs considerably from other species of *Embelia* known from eastern Asia. Indeed, there is some doubt, because of the lack of adequate material, that it belongs in this genus. The field label does not indicate the habit of this plant, but it is probably a vine or shrub. The inflorescences are very short and cymose, an unusual form for this genus. The pistils of the available flowers are apparently infertile, since the same specimens also bear nearly mature fruits. The placentæ do not show the ovules, either in the immature or in the mature specimens. There is some indication of a prolongation above the placenta or seed in the mature fruits. The style is thicker and more flat-topped than has been observed in the other species, and the slender stigma is longer. The position of this species in § *Micrembelia* is very uncertain.

11. EMBELIA PARVIFLORA Wall.

Embelia parviflora WALL., List. no. 2307 (1829); A. DC., Trans. Linn. Soc. 17 (1834) 130. Based on *Wallich 2307* from Silhet, Bengal, India. The type has not been examined.

Embelia myrtifolia HEMSL. & MEZ, Notizbl. Bot. Gart. Berlin 3 (1901) 107. Based on *Henry 9384* and *12826* in the Berlin herbarium. Duplicates have been examined.

Ribesiodes parviflorum KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Embelia parviflora* Wall.

A scandent shrub or vine up to 3 m long, the branchlets slender, generally distichous, densely ferruginous-villose with subglandular or stellate-tipped hairs; leaves distichous, petiolate, the petiole 1 mm long or less, villose, the blade chartaceous, ovate,

broadly obtuse or rounded or truncate at base, rather gradually and acutely narrowed to a generally rounded apex, 10 to 25 mm long, 6 to 10 mm wide, entire with slightly recurved margin, dark green above, much paler beneath, glabrous on upper surface, more or less ferruginous-pubescent on lower surface, especially on midrib and sometimes also above, conspicuously lepidote-punctate beneath, the midrib prominent, the lateral nerves very obscure; inflorescences axillary, subumbellate, or cymose, 5 to 10 mm long, ferruginous-puberulent, the basal scales obscure or wanting, the pedicels 2 mm long, the bracts lanceolate to subulate, ciliate, much shorter than pedicels; flowers white, 5-merous, minute, about 2 mm long; sepals shortly united at base, ovate or lanceolate, acute, ciliate, more or less punctate; petals almost free, ovate or oblong, about 1.5 mm long, glabrous outside, densely papillose on margin and within, more or less conspicuously punctate; stamens in female flowers much reduced, the anthers subsessile, in male flowers equaling or slightly longer than petals, attached somewhat above their base, the filaments slender, the anthers broadly ovoid, cordate at base, short-apiculate at apex, scarcely glandular-punctate on back; pistil in male flowers apex, scarcely glandular-punctate on back; pistil in male flowers much reduced or wanting, in female flowers about equaling petals, the ovary ovoid, glabrous except for pubescence generally about base of style, the style twice length of ovary, slender, often twisted, the stigma flattened or disc-shaped; fruit globose, 5 mm in diameter or less, dark reddish, smooth, more or less punctate.

Southern Asia from Sumatra, Assam and Upper Burma to southern China.

CHEKIANG: *Ching 2034* (*A, C*); *Nanking, Herb. Univ. 7326* (*C*).

FUKIEN: *H. H. Chung 3316* (*A, Am, C*).

HONGKONG: *Hongkong Bot. Gard., Herb. 641* (*A*).

HAINAN: *S. K. Lau 23049* (*A, W*); *C. Wang 35799* (*W, Y*).

KWANGTUNG: *C. C. C. 6765* (*NA*), *8754* (*NA*), *8763* (*NA, Y*), *9934* (*NA, W, Y*), *14602* (*C, NA*), *14686* (*NA*); *S. K. Lau 810* (*A, Y*), *2267* (*A*); *Wang & Ling 7388* (*C*); *Y. K. Wang 538* (*A, C, V, Y*).

KWANGSI: *Ching 6243* (*Y*); *S. P. Ko 55963* (*A, W*); *H. Y. Liang 70080* (*A*); *Steward & Cheo 798* (*A, Y*); *W. T. Tsang 23128* (*A*), *23283* (*A*); *C. Wang 39170* (*A, W*), *40411* (*A*).

KWEICHOW: *Handel-Mazzetti 10848* (*A, V*).

YUNNAN: *Henry 9384* (*A, M, W*), *12826* (*A, M*), *12826A* (*A, M, Y*), *12826B* (*A, M, Y*), *12826C* (*W*); *Rock 2488* (*A, C, W*);

H. T. Tsai 51729 (*A*), *51837* (*A, Fa*), *55095* (*A*), *56326* (*A, W*), *60149* (*A, W*), *60599* (*A, W*); *C. W. Wang 72937* (*A, W*), *73822* (*A, W*), *73901* (*A, W*), *74106* (*A, W*), *76408* (*A, W*), *76879* (*A, W*), *78381* (*A, W*).

This species may be easily recognized by its small, entire, disticous leaves.

12. EMBELIA POLYPODIOIDES Hemsl. & Mez.

Embelia polypodioides Hemsl. & Mez, Notizbl. Bot. Gart. Berlin 3 (1901) 108; Hook. Icon. Pl. 28 (1891) *pl. 2725*. Based on *Henry 10060A* from Mengtze, Yunnan, in the Berlin herbarium. A duplicate has been examined.

A scandent shrub or vine about 3 m long [*ex H. T. Tsai 51744*], the branches slender, densely ferruginous-villose or strigose with crinkled hairs; leaves distichous, subsessile or with very short petioles, the blade oblong or lanceolate, subcordate at base, acute and mucronate at apex, 2 to 3.5 cm long, 0.6 to 1 cm wide, crenate with spinose teeth, densely lepidote, punctate with large black sorilike glands on both surfaces especially near margin and apex, glabrous except the ferruginous-pilose prominent midrib, the lateral nerves about 12 pairs, uniting in a more or less irregular marginal nerve, the veinlets reticulate; inflorescences axillary, distinctly subumbellate, sessile, 1- to 3-flowered, about 5 mm long, minutely scaly at base, ferruginous-villose; pedicels up to 3 mm long; flowers reddish, 5-merous, minute; sepals united nearly half their length, the lobes narrowly ovate to triangular-ovate, acute, densely fimbriate or ciliate, strongly punctate; petals almost free, oblong, rounded or obtuse, about 3 mm long, punctate especially near apex, glabrous outside, densely papillose on margin and within; stamens in female flowers reduced, included, sessile, in male flowers about as long as petals, attached near their base, the filaments slender, the anthers rather large, ovate, acuminate, minutely apiculate, somewhat punctate on back; pistil in male flowers greatly reduced, in female flowers with ovoid glabrous ovary, the style exserted, slender, about twice length of ovary, more or less punctate, the stigma flattened, not swollen; fruit globose, about 4 mm in diameter.

Tonkin and Yunnan.

Yunnan: *Henry 10060* (*A, Y*), *10060A* (*A*), *10060B* (*W*); *H. T. Tsai 51632* (*A, W*), *51679* (*A, W*), *51744* (*A, W*).

This species may be readily recognized by its rather small, crenate, and distichous leaves.

13. EMBELIA PROCUMBENS Hemsl.

Embelia procumbens HEMSL. in Hook., Icon. Pl. 28 (1891) *pl. 2724*. Based on *Henry 11160* from Mengtze, Yunnan, in the Kew herbarium. Duplicates have been examined.

Embelia saxatilis HEMSL. in Hook., Icon. Pl. 28 (1891) *pl. 2724*. Based on *Henry 9793* from Mengtze, Yunnan, in the Kew herbarium. Duplicates have been examined.

A small, procumbent, repent, or climbing vine, the stems and branches ferruginous-pilose, more or less glabrescent; leaves subverticillate on shorter lateral branches, the petiole 5 mm long or less, the blade elliptic-ovate or lanceolate, rounded, obtuse or acute at both ends, apiculate at apex, generally about 2 cm long, 1 cm wide, ranging from 1 to 3 cm long and from 0.5 to 1.3 cm wide, more or less crenate with lanceolate or spinose teeth, black-punctate especially toward margin; generally glabrous except the minutely glandular-pubescent prominent midrib beneath, the lateral nerves about 7 pairs; inflorescences subterminal or axillary on short lateral leafy branches, subumbellate to corymbose, 8 to 10 mm long, glandular-puberulent and more or less pilose, the peduncle very short from a subscaly base, the pedicels 3 to 6 mm long, the bracts lanceolate to subulate, 1 mm long; flowers white, about 2 mm long; sepals united $\frac{1}{3}$ to $\frac{1}{2}$ their length, the lobes ovate, acute, 1 mm long, ciliate, glandular-puberulent, punctate; petals united at least half their length, densely and very minutely glandular-puberulent on both surfaces, the lobes broadly ovate, rounded, punctate; stamens in female flowers much reduced, included in corolla tube, in male flowers exceeding corolla, the filaments slender, the anthers shorter than filaments, ovoid, not punctate on back; pistil in female flowers with ovoid ovary, the ovules uniseriate, the style when mature much exceeding petals, the stigma disc-shaped or capitate; fruit globose, 5 mm in diameter, reddish, punctate.

YUNNAN: *Ducloux 166 (C); Henry 9793 (A, W, Y), 11160 (A, C, Y); Y. Tsiang 13111 (Su); C. W. Wang 72439 (A, W), 72517 (A, W)*.

This delicate trailing or climbing vine can be readily recognized by its slender, more or less pilose stems, its small, crenate, spinose, subverticillate leaves on short lateral branches, and by its flowers with petals united into a tube over half the length of the corolla, not merely shortly united at base as in all other Chinese species.

Embelia procumbens Hemsl. and *E. saxatilis* Hemsl. were originally described at the same time. The two descriptions show only minor variations in leaf shape and in size of inflorescence,

and Mez's descriptions show even fewer differences and confuse the original ones. Careful examination of the specimens cited show only variations which may be due to habitat or sex. Hence, Hemsley's two species are better considered as one, and, since the name "procumbens" seems much more applicable to this creeping species, that name is chosen.

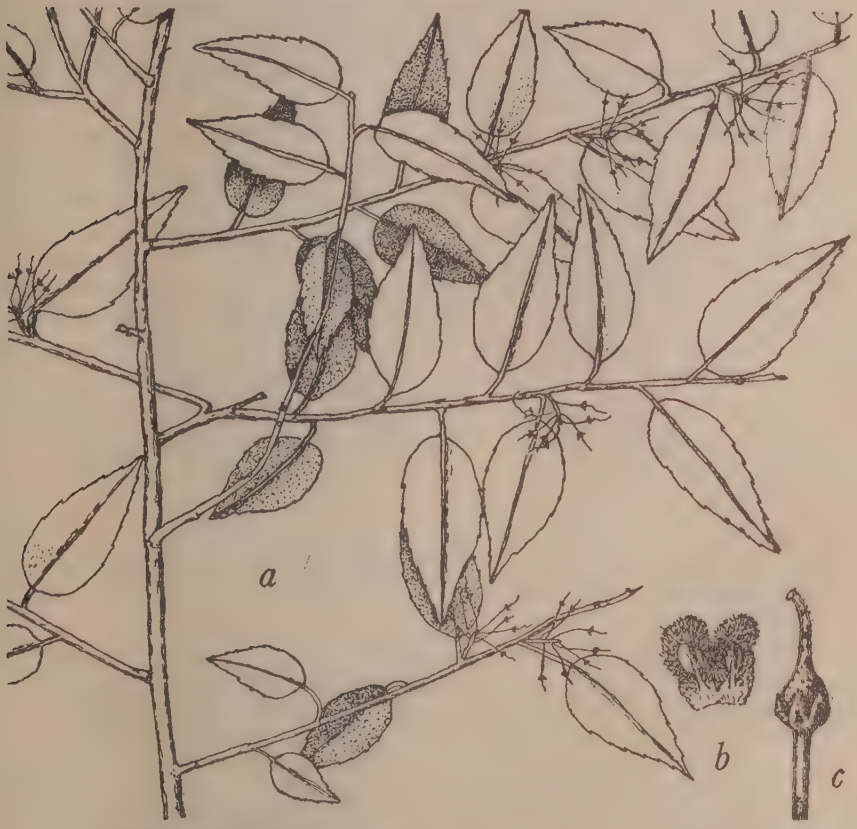

FIG. 33. *Embelia Henryi* Walker. *a*, branch with inflorescences, × 1; *b*, portion of corolla of female flowers, showing attached stamens, × 8; *c*, pistil with sepals, × 8. Drawn from the type, *Henry 10913* (*A*).

14, EMBELIA HENRYI Walker. Text fig. 33.

Embelia Henryi WALKER, Journ. Washington Acad. Sci. 27 (1937) 200, *fig. 3*. Based on *Henry 10913* from Mengtze, Yunnan, at the Arnold Arboretum.

A scandent or climbing shrub, the branches very slender, gray, fuscous-puberulent when young, glabrescent; leaves with channeled petiole 3 to 4 mm long, the blade coriaceous, lanceolate or

ovate, rounded or obtuse and slightly decurrent on petiole at base, long-acuminate at apex, 2 to 3 cm long, 8 to 10 mm wide, sharply and finely serrate, dull green above, slightly paler and black-punctate beneath especially along margin, glabrous, the midrib prominently raised beneath, the lateral nerves numerous, fine, slightly raised-reticulate on both surfaces; inflorescences axillary, 5- to 7-flowered, fuscous-puberulent, subcorymbose, the peduncle about 4 mm long arising from a sparingly scaly or subnaked base, the pedicels slender, 3 to 4 mm long, the bracts lanceolate, ciliate, about 0.5 mm long; flowers minute, 5-merous; sepals sometimes 6, united at base, about 0.5 mm long, the lobes lanceolate, acute, ciliolate or eciliolate; generally punctate on back, the petals shortly united at base, oblong-ovate, rounded at apex, 1.5 mm long, glabrous and punctate on outside, densely and minutely glandular-papillose within and on margin; stamens unknown in male flowers, in female flowers about half length of petals, the filaments short, the anthers minute, ovate; pistil in female flowers about 2.5 mm long, puberulent, the ovary globose or ovoid, the style thickened at base, narrowing upward, bent, exserted, stigma minutely capitate; fruit globose, 4 mm in diameter, subapiculate from persistent base of style, dark reddish, black-punctate.

Tonkin [64] and Yunnan.

YUNNAN: *Henry 10913* (*A*, *Y*).

This species is readily distinguished by its small, ovate, punctate leaves with rounded or obtuse bases.

15. EMBELIA PAUCIFLORA Diels. Text fig. 34a.

Embelia pauciflora DIELS, Bot. Jahrb. Engler 29 (1900) 517. Based on *Bock & von Rosthorn 25* from Nan-chuan, Szechwan, in the Berlin herbarium. A photograph of the type has been examined.

Embelia Schlechteri LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 374. Based on *Bodinier 2049* from Kweichow in the Léveillé herbarium. A fragment of the type has been examined.

A shrub or climbing vine 2 to 3 m long or longer, the branches very slender, reddish, glabrous except the minutely fuscous-puberulent young branchlets; leaves with minutely puberulent petiole 5 mm long, the blade chartaceous, ovate-lanceolate, sometimes ovate, rounded at base, acuminate at apex, 3.5 to 7 cm long, 1.5 to 2 cm wide, finely serrulate with appressed spinulose teeth, dull brownish-green above, paler and abundantly glandular-striate beneath, glabrous except the fuscous-puberulent midrib

[64] *See* citations of specimens by A. Rehder.(50, 14, p. 61)

above, the midrib prominent, the lateral nerves fine, inconspicuous; inflorescences axillary, subumbellate, 5- to 7-flowered, usually 3-flowered in fruit, puberulent, the peduncle only 1 to 2 mm long from a very sparingly scaly or subnaked base, the pedicels slender, 4 to 5 mm long; flowers 5-merous, 2.5 to 3 mm long; sepals less than 1 mm long, united about $\frac{1}{4}$ their length, the lobes broadly ovate, obtuse, crenulate or very minutely ciliolate, glabrous or fuscous-lepidote, more or less glandular-

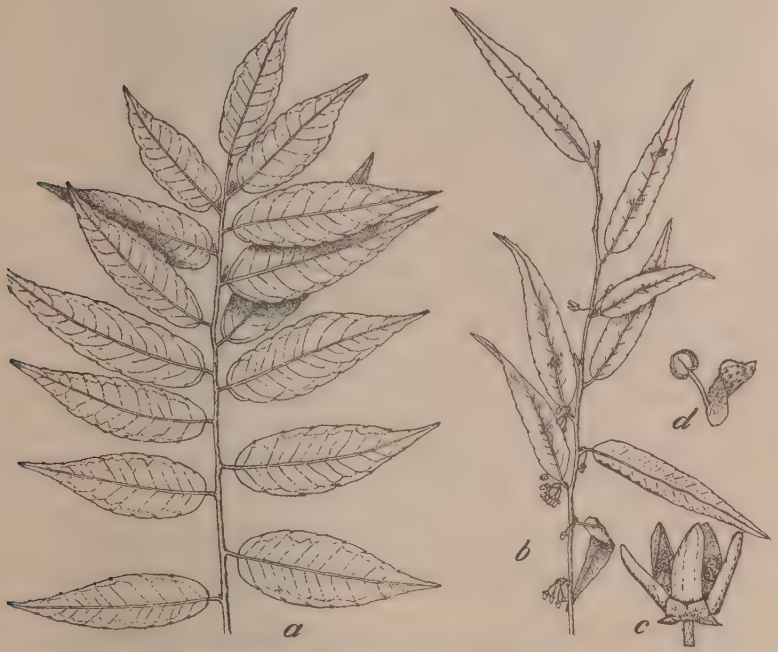

FIG. 34. *a*, *Embelia pauciflora* Diels; branchlet with immature inflorescences, × $\frac{1}{2}$. *b* to *d*, *Embelia pauciflora* var. *Blinii* (Léveillé) Walker. *b*, branchlet with inflorescences, × $\frac{1}{2}$; *c*, flower, × 5; *d*, petal and stamen, × 5. Part *a* drawn from a photograph of the type, *Rosthorn 25*; parts *b* to *d* from a fragment of the type, *Bodinier* (*Chaffanjon*) *2081*.

punctate; petals free almost to base, oblong-lanceolate, rounded or obtuse at apex, nearly 3 mm long, glabrous and reddish-punctate outside, densely and minutely glandular-pilose within; stamens in female flowers half length of petals or less, the anthers small, the filaments slender, in male flowers nearly twice length of petals, attached at their base, the filaments slender, the anthers ovoid, scarcely apiculate at apex, not glandular-punctate on back; pistil in male flowers greatly reduced or wanting, in

female flowers with globose, glabrous ovary, the style long, slender, exceeding petals, the stigma punctiform or slightly dilated; fruit globose, about 5 mm in diameter, reddish, glabrous-punctate.

South-central China.

KWEICHOW: *Bodinier 2049* (*A*); *Y. Tsiang 7623* (*Y*), *7869* (*V*, *Y*).

SZECHWAN: *Bock & von Rosthorn 25* (*A*).

This apparently rare species with axillary subumbellate inflorescences may be recognized by its glabrous or minutely puberulent stems, and by its ovate or ovate-lanceolate, serrulate, and abundantly glandular-striate leaves, 4 cm long or longer. It is most closely allied to *E. Henryi*, which has smaller, punctate leaves, not glandular-striate beneath.

15a. EMBELIA PAUCIFLORA var. BLINII (Léveillé) Walker. Text fig. 34 b to d.

Embelia Blinii LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 375. Based on *Bodinier* (*Chaffanjon*) *2081* from Kouy-yang, Kweichow, in the Léveillé herbarium. A duplicate of the type has been examined.

Embelia Dielsii LÉVEILLÉ, op. cit. 374. Based on *Cavalerie 1327* from Pin-fa, Kweichow, in the Léveillé herbarium. The type has been examined.

Embelia kaopoensis LÉVEILLÉ, Repert. Sp. Nov. Fedde 12 (1913) 186. Based on a collection by *Bodinier* December 15 (year ?) from Kao-po, Kweichow, in the Léveillé herbarium. A photograph and fragment of the type have been examined.

Embelia pauciflora var. *Blinii* WALKER, Journ. Arn. Arb. 15 (1934) 292. Based on *Embelia Blinii* Léveillé.

Differs from the typical form of the species in the narrower (0.8 to 1 cm broad), oblong-lanceolate leaves, not ovate or ovate-lanceolate.

KWEICHOW: *Bodinier*, December 15 (year ?) from Kao-po (*A*); *Bodinier 2081* (*A*); *Cavalerie 1327* (*E*).

This variety corresponds to the typical form of the species in every observable detail except leaf shape. The type material of *E. Blinii* is more adequate and more widely distributed than that of *E. Dielsii*, which was described at the same time.

16. EMBELIA LONGIFOLIA (Benth.) Hemsl.

Samara longifolia BENTH., Fl. Hongk. (1861) 205. Based on "Harland and Hance" from Hongkong. There has been examined at the Arnold Arboretum a photograph of a specimen in the Kew herbarium originally from the Bentham herbarium, of *Harland 1025*, which also bears the statement on the label "Hance's 1190." This is apparently the type. There is a rubbing from this same specimen at the New York Botanical Garden.

Embelia longifolia HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 62. Based on *Samara longifolia* Benth.

Ribesiodes longifolium KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Samara longifolium* Benth.

A vine up to 3 m long, the branches gray, not conspicuous lenticellate, glabrous; leaves petiolate, the petiole up to 1 cm long, narrowly wing-margined or merely channeled above, the blade chartaceous, oblanceolate or narrowly obovate, attenuate-cuneate at base, broadly acute to slightly acuminate or obtuse at apex, 6 to 12 cm long, 2 to 3 cm wide, entire with very finely revolute margin, equally green on both sides, obscurely or not at all punctate, glabrous, the midrib prominently raised beneath, the lateral nerves rather many, raised, the veinlets more or less raised-reticulate; inflorescences lateral or axillary, racemose, 4- to 10-flowered, about 1 cm long, somewhat puberulent, the peduncle up to 6 mm long from an inconspicuously scaly base, the pedicels 3 to 4 mm long, much exceeding minute, lanceolate bracts; flowers 4-merous, minute, 2 to 3 mm long; sepals united about ⅓ their length, the lobes ovate or lanceolate, acute, generally ciliate, punctate; petals free, oblong or ovate, rounded or obtuse, about 2 mm long; glabrous and densely punctate on outside, densely papillose or ciliate on margin and within; stamens in male flowers up to twice length of petals, attached near their base, the filaments slender, the anthers oblong, curved, densely black-punctate on back; pistil in male flowers much reduced, in female flowers about equaling petals, the ovary flask-shaped, narrowing into a style of about equal length, the stigma flat or disc-shaped; fruit globose, about 1 cm in diameter, reddish, longitudinally ribbed or wrinkled, obscurely punctate.

Southern China.

KIANGSI: *Gressitt 1624* (*A*).

FUKIEN: *H. H. Chung 3036* (*A, Am, C*); *Hongkong Bot. Gard., Herb. 2892* (*A*).

HAINAN: *C. Wang 35692* (*W, Y*).

KWANGTUNG: *C. C. C. 2028* (*A, M, NA, Y*), *12154* (*C, NA, W*), *13747* (*C, NA*), *14890* (*C, NA*); *W. Y. Chun 6440* (*A*); *Fenzel 129* (*C*); *S. K. Lau 833* (*A, Y*), *940* (*A, Y*), *2530* (*A*); *Y. W. Taam 234* (*A*), *396* (*A*); *C. L. Tso 20353* (*Y*), *20792* (*Y*), *20858* (*Y*); *Y. K. Wang 3207* (*Y*).

KWANGSI: *H. Y. Liang 69850* (*A, W*); *W. T. Tsang 23284* (*A, W*), *24150* (*A*), *28251* (*A*); *C. Wang 40622* (*A*).

This eastern species with short-racemose, axillary inflorescences 1 cm long may be recognized primarily by its large fruits, 1

cm in diameter. Its oblong, black-punctate anthers readily distinguish it from its nearest eastern relative, *Embelia laeta*.

17. EMBELIA SUBCORIACEA (C. B. Clarke) Mez.

Embelia nagushia D. Don var. *subcoriacea* C. B. CLARKE in Hook. f., Fl. Brit. Ind. 3 (1882) 516. Based on *Griffith* (*Kew Distrib. no. 3545*) from Khasia Mountains, India, in the Kew herbarium. *Henry 9885* at the Kew herbarium was compared with the type by Mr. E. P. Killip at the request of the writer. Duplicates of the Henry specimen have been examined.

Embelia subcoriacea MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 329. Based on *Embelia nagushia* var. *subcoriacea* C. B. Clarke.

A climbing shrub, the branches somewhat thickened, grayish-brown, more or less verrucose, glabrous; leaves with channeled petiole, 1 to 1.5 cm long, the blade coriaceous or chartaceous, obovate to elliptic-ovate or oblong, acute, cuneate or subobtuse at base, acuminate or acute or broadly obtuse and abruptly acuminate at apex, 9 to 14 cm long, 3.5 to 6 cm wide, entire with finely recurved margin, dull green above, scarcely paler beneath, obscurely or not all punctate, glabrous, the midrib prominently raised beneath, the lateral nerves numerous (much more than 10 pairs), raised on both sides, the veinlets raised-reticulate; inflorescences lateral, racemose, 3 to 5 cm long, from a cluster of more or less imbricate scales, glabrous, the axis rather thick and stiff, the pedicels stiff, about 5 mm long, the bracts narrowly lanceolate, about 2 mm long; flowers 4-merous, 3 mm long; sepals shortly united at base, lobes ovate or triangular-ovate, acute, ciliate, with or without a few punctate glands; petals free, ovate or oblong-ovate, obtuse, glabrous outside, densely puberulent within, minutely ciliolate, sparingly punctate; stamens in female flowers reduced, shorter than petals, the anthers ovate, with or without a few punctate glands on back, the filaments evident, in male flowers equaling or slightly exceeding petals, the filaments rather slender, the anthers oblong, not punctate-glandular on back; pistil about equaling petals, the style rather slender, the stigma punctiform; fruit globose or with somewhat conical base, apiculate from persistent style, about 8 mm in diameter, glabrous, dark reddish, sometimes longitudinally ridged or wrinkled.

Southwestern China.

KWANGSI: *S. P. Ko 55651* (*A*); *H. Y. Liang 66707* (*W*).

KWEICHOW: *S. W. Teng 90579* (*A*, *W*).

YUNNAN: *Forrest 8903* (*A*), *18588* (*E*), *18839* (*E*), *24460* (*W*), *26064* (*E*); *Henry 9885* (*A*, *M*, *Y*); *Maire 17* (*A*); *H. T.*

Tsai 54585 (*A, W*), *55725* (*A, W*), *55800* (*A, W*), *55901* (*A, W*); *Y. Tsiang 12677* (*Su*), *12848* (*Su*); *C. W. Wang 71938* (*A, W*), *77372* (*A, W*).

This western species with rather large leaves and axillary glabrous inflorescences 3 to 5 cm long may be recognized by its rather large fruits, 8 mm in diameter. The anthers are ovate and usually without punctate glands on the back.

18. EMBELIA LAETA (Linn.) Mez.

Samara laeta LINN., Mant. Pl. ed. 2 (1771) 199. This is the type species, described from Ceylon without reference to specimens.

Myrsine laeta A. DC., Trans. Linn. Soc. 17 (1834) 112, *nomen nudum*; DC., Prodr. 8 (1844) 103. Based on *Samara laeta* Linn.

Choripetalum obovatum BENTH., Lond. Journ. Bot. 1 (1842) 490. Described from a collection by Hinds in Hongkong. The type has not been seen.

Choripetalum Benthamii HANCE in Walp., Ann. Bot. 3 (1852) 10. Based on *Choripetalum obovatum* Benth., the name changed because not all leaves are obovate.

Samara obovata BENTH., Journ. Bot. Kew Misc. 4 (1852) 301. Based on *Choripetalum obovatum* Benth.

Embelia obovata HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 62. Based on *Choripetalum obovatum* Benth.

Ribesiodes obovatum KUNTZE, Rev. Gen. Pl. 2 (1891) 403. Based on *Choripetalum obovatum* Benth.

Embelia laeta MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 326. Based on *Samara laeta* Linn.

Usually a scandent shrub or vine, sometimes a dwarfed or decumbent shrub 1 to 3 m long, the branches gray or reddish, lenticellate, glabrous; leaves with narrowly winged or channeled petiole 5 to 8 mm long, the blade chartaceous, obovate, oblong or oblong-lanceolate, cuneate at base, rounded, obtuse, or sometimes retuse at apex, about 4 cm long, 1.5 cm wide, ranging from 3 to 7 cm long, and from 1 to 2.5 cm wide, entire, deep green above, paler beneath, usually grayish green when dry, not punctate, glabrous, the midrib prominent, the lateral veins very obscure, the veinlets finely reticulate; inflorescences lateral or axillary, racemose, 3- to 8-flowered, 0.5 1 cm long, minutely puberulent, the peduncle 2 to 3 mm long in flower, becoming up to 8 mm long in fruit, arising from a cluster of imbricate scales, these with scalelike bracts at base of pedicels, obovate or oblong, about equaling pedicels (2 mm); flowers white, 4-merous, minute, about 2 mm long; sepals united about $\frac{1}{3}$ their length, the lobes ovate, acute, glabrous, punctate; petals free, ovate or oblong, rounded or obtuse, entire or subciliate, glabrous outside,

densely papillose within, obscurely punctate; stamens attached at base of petals, much reduced in female flowers, in male flowers up to twice length of petals, the filaments rather slender, anthers ovate to reniform, dorsally attached, not distinctly glandular on back; pistil in male flowers greatly reduced, in female the flowers about equaling petals, the ovary flask-shaped, tapering into a style of equal length or shorter, the stigma flat or disc-shaped, not swollen; fruit globose, apiculate, about 5 mm in diameter, smooth or longitudinally wrinkled, obscurely punctate.

Indo-China and southern China.

KIANGSI: *S. K. Lau 3983* (*A*).

FUKIEN: *H. H. Chung 1184* (*A, Am, C*), *1685* (*Am, C*), *4543* (*A*), *4560* (*A*), *4562* (*A*), *4576* (*A, Y*), *4613* (*A*), *4750* (*A*), *4773* (*A*), *4778* (*A*), *4814* (*A*), *4848* (*A*), *5451* (*A, Y*), *5899* (*A*), *6017* (*A*), *6184* (*A*), *6240* (*A*).

HONGKONG: *C. C. C. 16508* (*A, C, NA, W*); *Champion 82* (*G*), *377* (*Y*); *N. K. Chun 40042* (*Y*); *W. Y. Chun 5172* (*C*); *Hance 831* (*G*); *Kuntze 3424* (*Y*); *Setchell & McClure.* April 27, 1929 (*C*); *Y. Tsiang 174* (*A*); *C. Wang 32445* (*Y*); *Wright 203* (*W*).

HAINAN: *C. C. C. 16865* (*C*); *Chu Vong-may 159* (*C*); *W. Y. Chun 5778* (*C*), *5946* (*C, NA*); *F. C. How & N. K. Chun 70118* (*A, W, Y*); *S. K. Lau 1769* (*A, Y*), *6333* (*A, W*); *C. I. Lei 362* (*A, Y*); *H. Y. Liang 64639* (*W, Y*).

KWANGTUNG: *C. C. C. 190* (*A*), *270* (*A, NA, W*), *352* (*A, Br, G, NA, W*), *2021* (*A, NA*), *2319* (*NA*), *8821* (*NA*), *11147* (*NA*), *12683* (*C, NA, W*), *13185* (*C, NA*), *19261* (*Y*), *19320* (*Y*); *S. L. Chang 167* (*A*); *N. K. Chun 40442* (*Y*), *44414* (*Y*); *W. T. Tsang 20022* (*Y*), *28512* (*A, W*), *28762* (*A, W*), *28896* (*A, W*); *Y. Tsiang 4* (*A*), *1716* (*A, C*), *1904* (*A, C*); *C. L. Tso & Y. Tsiang 2020* (*A*); *Y. K. Wang 393* (*A, C*), *1810* (*C*).

KWANGSI: *Ching 8344* (*Y*), *8369* (*Y*), *8370* (*Y*); *W. T. Tsang 24669* (*A*).

This common vine can usually be readily recognized by its rather small obovate leaves, generally rounded at the apex, its usually reddish branches, and its short inflorescences.

UNCERTAIN SPECIES

1. **EMBELIA PENDULIRAMULA Hayata.**

Embelia penduliramula HAYATA, Icon. Pl. Formosa 5 (1915) 84, *pl. 9.* Based on a collection by B. Hayata from "Mt. Arisan, inter Heishana et Nimandaira, ad 7000 ped. alt., Aprili (fl. et fr.) 1914." This specimen has not been seen.

A comparison of the original description of this species with that here presented for *Embelia laeta* Mez shows the following differences:

E. penduliramula.	*E. laeta.*
Ultimate branchlets minutely hirsute.	Branchlets all glabrous.
Pedicels glandular-puberulent.	Pedicels glabrous.
Sepals glandular-ciliate.	Sepals eciliate.
Peduncles about 1 cm long.	Peduncles 2 to 3 mm long, up to 8 mm in fruit.

The pubescence suggests *E. longifolia*, but in other characters these two species are quite distinct. The description of the anthers of *E. penduliramula* conforms well with those of *E. laeta*, but not with those of *E. oblongifolia*. The fruit seems to be the same as that of *E. laeta*. Hayata's differentiation of *E. penduliramula* from *E. laeta* on the basis of the smaller leaves, of the filaments wrapped by the petals, and of the hirsute inner surfaces of the petals of the latter is wholly inadequate.

2. EMBELIA UNDULATA (Wall.) Mez.

Embelia undulata MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 327. Based on *Myrsine nudulata* Wall.

Myrsine undulata WALL., List no. 230 (1830). Based on *Wallich 2301*.

Forrest 18588, from Yunnan, has been referred to this species (14 p. 349) but agrees with *E. subcoriacea* (C. B. Clarke) Mez as here interpreted. Until the type of *E. undulata* (Wall.) Mez can be examined, this species must remain in doubt.

3. EMBELIA VIRIDIFLORA (A. DC.) Scheff.

Embelia viridiflora (A. DC.) SCHEFF., Myrs. Archip. Ind. (1867) 45.

This species is listed in H. H. Chung, A Catalogue of the Trees and Shrubs of China,(10) without reference to specimens. According to Mez's monograph it is a native of Java. Chung was doubtless in error in including it in his list.

Excluded Species

1. EMBELIA CAVALERIEI Léveillé.

Embelia Cavaleriei LÉVEILLÉ, Fl. Kouy-Tcheou (1914) 284. This species, based on *Bodinier* (*Cavalerie*) *2635–1* in the Léveillé herbarium, has been referred by A. Rehder to *Ilex metabaptista* var. *myrsinoides* (Léveillé) Rehd. in the Aquifoliaceæ.(50, 14 p. 26)

2. EMBELIA ESQUIROLII Léveillé.

Embelia Esquirolii LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 374.

This species, based on a specimen collected by J. Esquirol at the College, Kweichow, May 10, 1906, in the Léveillé herbarium,

has been referred by A. Rehder to *Celastrus gemmata* Loesn. in the Celastraceæ.(50, 14 p. 250)

3. EMBELIA FORDII (Hemsl.) Mez.

Embelia Fordii MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 326. *Ardisia Fordii* Hemsl., the basis of this species, properly belongs in *Ardisia*.

4. EMBELIA RUBRINERVIS Léveillé.

Embelia rubrinervis LÉVEILLÉ, Repert. Sp. Fedde 10 (1912) 374.

This species, based on *Esquirol 729* from Kwangsi in the Léveillé herbarium, has been referred by A. Rehder to *Rhamnella rubrinervis* (Léveillé) Rehd. in the Rhamnaceæ.(50, 15 p. 12)

5. EMBELIA RUBRO-VIOLACEA Léveillé.

Embelia rubro-violacea LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 375.

This species, based on *J. Esquirol 429* from Kweichow in the Léveillé herbarium, has been referred by A. Rehder to *Ilex purpurea* Hassk. in the Aquifoliaceæ.(51, p. 239)

6. EMBELIA VALBRAYI Léveillé.

Embelia Valbrayi LÉVEILLÉ, Cat. Pl. Yun-Nan (1916) 177.

This species, based on a collection by E. E. Maire from "rochers dérrière La-Kou, 2400–2500 m. juill.–sept. 1912" in the Léveillé herbarium, has been referred by A. Rehder to *Schizandra propinqua* Hook. f. and Thoms. var. *sinensis* Oliver in the Magnoliaceæ.(50, 10 p. 191)

7. EMBELIA VANIOTI Léveillé.

Embelia Vanioti LÉVEILLÉ, Fl. Kouy-Tcheou (1914) 285.

This species, based on *Esquirol 3251* in the Léveillé herbarium, has been referred by A. Rehder to *Gaultheria yunnanensis* (Franch.) Rehd. in the Ericaceæ.(50, 15 p. 282)

IMPORTANT SPECIMEN NOT DETERMINED

C. W. Wang 73503, collected in a mixed forest in Fo Hai, Yunnan, at 1530 m altitude, May, 1936, is a woody plant about 6 m high with a trunk diameter of 12 cm and greenish-white flowers. The leaves suggest that it is near *Embelia Gamblei* Kurz, but it certainly is not that species. The specimen is inadequate for description as new.

5. Genus MYRSINE Linn.

Myrsine LINN., Sp. Pl. (1753) 196; Gen. Pl. ed. 2 (1754) 90. Based on *Myrsine africana* Linn. from Ethiopia.

Anamtia KOIDZUMI, Bot. Mag. Tokyo 37 (1923) 39. Based on *Anamtia stolonifera* Koidz., a synonym of *Myrsine marginata* Mez.

Flowers dioecious, 2 to 3 mm long, 4- or 5-merous; sepals nearly free or united to half their length, imbricate or open, usually ciliate; petals nearly free or rarely coalesced half their length, usually ciliate; stamens attached at base of petals, the filaments distinct, short, the anthers ovate or reniform, dehiscing by longitudinal slits; ovary glabrous, the pistil with ovoid or ellipsoid ovary, the ovules few, uniseriate, the style short, the stigma punctiform or flattened and fimbriate or incised; fruit a globose 1-seeded berry with crustaceous endocarp, the albumen horny, ruminate, the embryo cylindrical, transverse.

Dwarf shrubs to small trees, the leaves entire or serrate, the inflorescences few-flowered, lateral, umbellate, at apices of very short verruciform branches, these axillary or appearing on 2-year old wood.

Species about five, occurring from the Azores throughout Africa, Madagascar, and temperate and subtropical Asia to Formosa, four in eastern Asia.

The concept of the genus here adopted is the greatly restricted one presented in Mez's monograph, where many species of *Myrsine* are transferred to *Rapanea*. This narrow concept is not accepted by all recent workers, most notably being rejected by Gamble in his treatment of the Malayan species,(27) in which *Rapanea* is considered to be confined to the New World.

Key to the eastern Asiatic species of Myrsine.

*a*¹. Leaves 3 cm long or less; branchlets pubescent ..... 1. *M. africana.*

*a*². Leaves usually over 3 cm long; branchlets glabrous or very minutely puberulent.

*b*¹. Flowers usually 5-merous; sepals oblong or elliptic; filaments elongate; anthers small, reniform; stigma punctiform or slightly dilated; leaves usually entire, sometimes with slender teeth; petioles not distinctly decurrent on branchlets; mostly eastern.

*c*¹. Leaves elliptic-lanceolate, long-acuminate at apex, more or less punctate beneath; pedicels 3 mm long or less; sepals 1 mm long or less ..... 2. *M. marginata.*

*c*². Leaves elliptic ovate, shortly and bluntly acuminate at apex, not punctate beneath; pedicels 4 mm long or longer; sepals 1.5 to 2 mm long ..... 3. *M. elliptica.*

*b*². Flowers usually 4-merous; sepals ovate to triangular; filaments short; anthers large, ovate; stigma broad, flattened, fimbriate; leaves mostly with sharp teeth above middle; petioles distinctly decurrent on branchlets; western ..... 4. *M. semiserrata.*

1. MYRSINE AFRICANA Linn.

Myrsine africana Linn., Sp. Pl. (1753) 196. Originally described from Ethiopia by Linneaus in 1737.(32, p. 72)

Myrsine bifaria WALL. in Roxb., Fl. Ind. ed. Carey 2 (1824) 296. Described from Nepal, India, without reference to specimens.

Myrsine africana var. *bifaria* FRANCH., Nouv. Arch. Mus. Hist. Nat. Paris II 6 (1833) 82, [Pl. David 1 (1883) 202]. Based on *Myrsine bifaria* Wall.

Myrsine microphylla HAYATA, Icon. Pl. Formosa 3 (1913) 149. Based on *U. Mori 4579* from Daishizan, Taito, Formosa. The type has not been examined.

Rhamnus myrtillus LÉVEILLÉ, Repert. Sp. Nov. Fedde 12 (1913) 535. Based on a collection by E. E. Maire in 1912 in Tong-Tchouan, Yunnan. This species was referred to *Myrsine africana* Linn. by A. Rehder in 1934.(50, 15 p. 293)

Myrsine vaccinifolia HAYATA, Icon. Pl. Formosa 5 (1915) 87. Described from Formosa without mention of specimens.

A shrub or small tree 0.5 to 2 m high, the branchlets blakish, angled from prominently decurrent bases of petioles, ferruginous-puberulent at least when young; leaves subsessile, the blade chartaceous or coriaceous, usually elliptic-ovate, varying from orbicular to obovate, oblong, or lanceolate, obtuse or acute at base, broadly or narrowly rounded or acute at apex, usually spinose-mucronate, 0.5 to 3 cm long, serrate from middle or rarely from base with spinose teeth (these often obsolete), glabrous, rarely minutely reticulate, usually punctate beneath especially at margin, the lateral nerves few, not uniting in a marginal nerve; inflorescences axillary, subfasciculate, the pedicels 0.5 to 1.5 mm long, glabrous or minutely glandular-puberulent; flowers 4-merous, 2 to 2.5 mm long; sepals free or shortly united, ovate to ovate-elliptic, usually ciliate, more or less punctate, glabrous; petals in female flowers about twice length of sepals, their lower half or more united into a tube, lobes squamiform, rounded or acute, punctate especially at apex, in male flowers shortly united at base, lanceolate; stamens in male flowers large, 2 or 3 times length of corrolla, the filaments short, attached to base of petals, glabrous or pilose, the anthers large, erect, oblong, apiculate, purple; pistil in male flowers much reduced, the ovary ovoid-clavate, the style short, the stigma punctiform; in female flowers the stigma large, flat, discoid, with lobed or fissured margin; fruit globose, up to 5 mm in diameter, red, smooth.

From the Azores throughout Africa, Arabia, temperate and subtropical India, Tibet, and China to Formosa.

HUPEH: *Henry 1114A* (*W*), *3808* (*G*); *Nanking, Herb. Univ. 3576* (*A*), *3640* (*A*), *3982* (*W*), *4395* (*A*), *15253* (*A?*); *Silvestri 1706* (*A*), *3133* (*A*); *Wilson* (*Veitch Exped.*) *145* (*Y*); *Wil-*

son (Arn. Arb. Exped.) 3298 (A, G, M, W, Y); Wu-Han Univ., Herb. Nat. 1531 (A), 1657 (A, Y).

KWEICHOW: *Cavalerie 840 (A); S. W. Teng 90447 (A, W); Y. Tsiang 4200 (A, W), 4939 (W), 7152 (W), 7806 (W), 8003 (A, W).*

SZECHWAN: *Bock & von Rosthorn 2169 (A); W. C. Cheng 1952 (A); C. S. Fan & class 97 (A); W. P. Fang 50 (A, W, Y), 122 (W), 1952 (Y), 3839 (A, Y), 4987 (A), 5065 (A), 5565 (A, W), 5651 (A), 9128 (A), 9488 (A), 9792 (A), 9820 (A), 9850 (A), 9883 (A); Granger 38 (C), 54 (C); Rock 12011 (A, C), 16106 (A, W), 24323 (A, Y).*

YUNNAN: *Ducloux 101 (C, Y), 476 (C, Y); Forrest 4192 (E), 10077 (A), 10948 (A), 11432 (A); Handel-Mazzetti 13064 (A); Henry 9972 (A, Y), 9972A (A, Y), 9972B (A, W); Maire 32 (A), 314 (A, C), 315 (A), 856 (C), Ser. B, 3725 (C, W), 7383 (C); Rock 6507 (C, W), 7799 (C, W), 11586 (C, W), 16106 (A, W); Schneider 97 (A), 194 (A), 260 (A), 268 (A), 357 (A), 3398 (A), 3922 (A); H. Smith 1637 (A); Simeon Ten 55 (A), 56 (A); H. T. Tsai 52848 (A), 53500 (A, W), 53535 (A, W), 53543 (A), 53553 (A); C. W. Wang 62650 (A, W), 62663 (A, W), 62785 (A, W), 65053 (A, W), 65398 (A, W), 66572 (A, W), 68303 (A, W), 69102 (A, W), 69291 (A, W), 71515 (A, W); T. T. Yü 5811 (A), 7351 (A), 14124 (A).*

TIBET: *Forrest* (1904) *418 (A); Rock 8898 (C, W).*

This is the most widely distributed species of the Myrsinaceæ. It is readily distinguished by its small serrate leaves and minutely puberulent branchlets, as well as by its large anthers. It is rather variable and many attempts have been made to subdivide it, but without success.

3. MYRSINE MARGINATA Mez.

Myrsine marginata MEZ, in Engl., Pflanzenreich **9** (IV. 236) (1902) 339. Based on *Faber 96* and *657* from "Prov. Kwang-tung in den Ningpoo-Bergen" (an error for Ningpo, Chekiang) in the Kew and Vienna herbaria. Duplicates have been examined.

Anamtia stolonifera KOIDZUMI, Bot. Mag. Tokyo **37** (1923) 40. Based on a collection by Koidzumi, September 1912, from Prov. Yamato, Japan. This specimen has not been examined.

A collection by G. Masamune from Yakusima, July 24, 1928, at the New York Botanical Garden, referred to this species, agrees well with the description in Japanese and with the illustration published with Nakai's transfer to *Rapanea* (*see* next synonym), as well as with the description. The differences are not significant.

Rapanea stolonifera NAKAI, Trees & Shrubs Indig. Jap. rev. ed. (1927) 297, *illus.* Based on *Anamtia stolonifera* Koidz.

Anamtia marginata MASAMUNE, Prelim. Rep. Veg. Yakusima (1929) 107. Based on *Myrsine marginata* Mez.

Anamtia Mezii MAZAMUNE, Journ. Soc. Trop. Agr. 3 (1930) 22. Based on *Myrsine marginata* Mez.

A shrub or small tree up to 2 m high, the branches slender, somewhat angled from inconspicuously decurrent petioles, glabrous; leaves petiolate, the petiole 5 to 8 mm long, not distinctly decurrent along stem, the blade subcoriaceous, elliptic-lanceolate, acute at base, long-acuminate at apex, 6 to 10 cm long, 1.5 to 3 cm wide, usually entire but sometimes sharply serrate above middle (similar to *M. semiserrata*), glabrous, more or less punctate below especially along margin near apex, dull green above, paler and sometimes with minute pores beneath, the lateral nerves uniting in a rather conspicuous marginal nerve; inflorescences sessile, axillary or lateral, umbellate or fasciculate, with a more or less scaly base, few-flowered, the pedicels slender, 2 to 3 mm long, glabrous, arising from a scaly base; flowers scarcely 2 mm long; sepals free or shortly united, usually narrowly elliptic, acute, scarcely 1 mm long, distinctly glandular-punctate, glabrous, eciliate; petals shortly united at base, narrowly oblong, about twice length of sepals, punctate and glabrous on back, strongly papillose within; stamens small, scarcely as long as petals, the filaments distinct, attached near base of petals, the anthers small, subreniform, rarely punctate on back; ovary in female flowers ovoid or ellipsoid, tapering into a slender style of equal length, the stigma punctiform or slightly dilated; fruit globose, 3 to 4 mm in diameter, reddish or black.

Southeastern China to Formosa and Yakusima.

JAPAN, Island of Yakusima: *G. Masamune*, July 14, 1928 (*Y*).

FORMOSA: *Formosa, Herb. Gov't. 21186* (*C*); *Gressitt 357* (*A, Y*); *Hayata 649* (*C*); *Wilson 9811* (*A*).

CHEKIANG: *Barchet 472* (*W*); *Faber 96* (*Y*), *657* (*Y*).

FUKIEN: *Fong* (distributed by H. H. Hu) *63* (*C*), *86* (*C*), *94* (*C*); *Gressitt 1689* (*A*).

HAINAN: *C. Wang 35981* (*W, Y*), *35999* (*Y*), *36857* (*W, Y*).

KWANGTUNG: *C. C. C. 12073* (*NA, W*), *12570* (*C, NA, W*); *W. Y. Chun 5916* (*A, C*); *W. T. Tsang 20117* (*A, Y*), *20160*, (*Y*), *20614* (*Y*); *C. L. Tso 20840* (*Y*), *21010* (*A*).

KWANGSI: *C. Wang 39309* (*A, W*), *39195* (*A, W*).

YUNNAN: *H. T. Tsai 51760* (*A, W*).

This species may be distinguished from *Myrsine africana* by its larger leaves and 5-merous flowers with smaller anthers. From *M. elliptica* it differs in its longer and narrower leaves, and in its smaller flowers with wider and more densely papillose petals. It differs from *M. semiserrata* in its entire leaves, with marginal nerves formed by the anastomosing lateral veins, and in its usually 5-merous flowers. The latter, however, occasionally has entire leaves.

3. MYRSINE ELLIPTICA Walker sp. nov. Text fig. 35.

Frutex ramulis gracilibus junioribus minutissime puberulis canescentibus et glabrescentibus; petiolus non decurrens; lamina subcoriacea, 3 ad 4.5 cm longa, 1.7 ad 2.5 cm lata, late elleptica, utroque aequaliter obtusis, apice abrupte acuminato, margine plana, glabra, subtus minutissimis poris penetrata, non punctata, nervibus lateralibus non perspicuis, in nervulum marginalem non confluentibus; inflorescentiae axillares, subumbellatae, sessiles, basi obscure squamulosae, pauciflorae; flores 5-meri, 3 mm longi, pedicellis 4 ad 5 mm longis, glabris; sepalla elliptica vel oblongo-lanceolata, obtusa vel rotundata, 1.5 ad 2 mm longa, glanduloso-punctata; petala anguste lanceolata vel oblonga, 3 mm longa, intus minute papillosa, punctata; stamina filamentis perspicuis donata, antheris parvis reniformibus, dorso non punctatis; pistillum in ♀ floribus circa 1.5 mm longa, stylo conico ovarium subaequante, stigmate punctiformi (?); fructus globosus, 5 mm diametro, non punctatus.

FIG. 35. *Myrsine elliptica* Walker sp. nov. *a*, branchlet with inflorescences, × ½; *b*, flower, × 5. Drawn from the type, *C. Wang 39429* (*W*).

A small branching shrub, the height unknown, the branchlets rather slender, brownish or reddish, very minutely puberulent

when young, becoming gray and glabrous, finely striate; leaves with channeled or narrowly winged petiole 6 to 8 mm long, not decurrent on stems, the blade subcoriaceous, broadly elliptic, equally obtuse at both ends with bluntly acuminate tip, 3 to 4.5 cm long, 1.7 to 2.5 cm wide, entire with reflexed edge, glabrous, dull green above, scarcely paler and with minute pores beneath, not punctate, the lateral nerves inconspicuous, straight but curved at ends, not uniting in a distinct marginal nerve; inflorescence axillary, subumbellate, sessile with more or less scaly bases, few-flowered, the pedicels slender, 4 to 5 mm long, glabrous; flowers white, 5-merous, 3 mm long; sepals very shortly united at base, elliptic- to oblong-lanceolate, obtuse or rounded, 1.5 to 2 mm long, glandular-punctate, glabrous, eciliate; petals free or shortly united at base, narrowly lanceolate or oblong, 3 mm long, glabrous outside, very minutely papillose within, punctate; stamens slightly shorter than petals, the filaments distinct, attached near base of petals, the anthers small, reniform, not punctate on back; pistil in male flowers apparently reduced, in female flowers about 1.5 mm long, the ovary ovoid, the style tapering, about equaling ovary, the stigma punctiform; fruit globose, 5 mm in diameter, red, striate, not punctate.

Type in the United States Herbarium, no. 1761569, collected by *C. Wang, no. 39429*, in Kwangsi for Sun Yatsen University, on a rocky slope of Yao Shan, Tsengyuen, June 19, 1938, the specimen apparently bearing male flowers; duplicate at the Arnold Arboretum. An additional specimen examined is *C. Wang 40310 (A)* collected in a dense forest on Yao Shan, October 23, 1936, with one fruit and several female flowers without petals and stamens.

This species most nearly resembles *M. marginata* Mez, but differs in having shorter and more broadly elliptic leaves with shortly and bluntly acuminate apices, not punctate beneath, the flowers slightly larger, with narrower and sparingly papillose petals.

4. MYRSINE SEMISERRATA Wall.

Myrsine semiserrata WALL. in Roxb., Fl. Ind. ed. Carey 2 (1824) 293. Described from Nepal, India. The type, probably *Wallich 2295*,(62) has not been seen.

Celastrus Cavaleriei LÉVEILLÉ, Repert. Sp. Nov. Fedde 13 (1914) 262 [not *C. Cavaleriei* Léveillé, Mond. Pl. II. 18 (1916) 31, referred by Rehder to *C. stylosa* Wall.(50, 14 p. 293)]. Based on *Cavalerie 1744* from Kweichow in the Léveillé herbarium. A photograph and fragment of the type have been examined.

Celastrus Seguini LÉVEILLÉ, Repert. Sp. Nov. Fedde 13 (1914) 262. Based on *Bodinier* (*Seguin*) *2609* and *Bodinier 2180* in the Léveillé herbarium. Duplicates have been examined.

A glabrous shrub or small tree up to 7 m high (rarely 10 to 12 m), the branchlets brownish to grayish, somewhat angular from the usually clearly decurrent petioles, glabrous; leaves petiolate, the petiole about 4 mm long, distinctly decurrent along stem, the blade subcoriaceous, elliptic to lanceolate, acute or attenuate at the somewhat decurrent base, long-acuminate or acute at apex, about 9 cm long, 2 cm wide, generally serrate above middle, rarely below, with erect spiniform teeth (these sometimes much reduced), punctate beneath, reticulate, the lateral veins not forming a prominent marginal nerve; inflorescences axillary, fasciculate or umbellate, 3- to 7-flowered, the pedicels 2 mm long, glabrous, arising from a scaly base; flowers yellowish green, generally 4-merous, about 2 mm long; sepals united $\frac{1}{3}$ to $\frac{1}{2}$ their length, ovate or triangular to elliptic, acute or obtuse, less than 0.5 mm long, glandular-punctate, sometimes ciliate; petals almost free, 3 to 4 times length of sepals, oblong-lanceolate or ligulate, obtuse or rounded, strongly glandular-punctate on both surfaces, sometimes glandular-pubescent or ciliate near apex; stamens equal to or slightly longer than petals, the filaments short, usually glabrous, the anthers large, ovate, orange or purple; pistil in female flowers shorter than stamens, the ovary ovoid, the style short-cylindric, the stigma flat with laciniate or fimbriate margin; fruit globose, 4 to 5 mm in diameter, red, becoming bluish black or purple, punctate.

Northwestern Himalaya, India, Burma, southeastern Tibet, and western and central China.

HUPEH: *Henry 3277* (*A, G, Ph, W, Y*), *3277B* (*A, G*), *3277C* (*W*), *3277D* (*G, Y*), *7685* (*G, W*); *Wilson* (*Veitch Exped.*) *163* (*W, Y*), (*Arn. Arb. Exped.*) *3091* (*A, W*), *3297* (*A, F, G, M, W, Y*); *Wu-Han Univ., Herb. Nat. 542* (*A, Y*), *1788* (*A, Y*).

KWEICHOW: *Bodinier 2180* (*A*), *2609* (*A*); *Cavalerie 1744* (*A*); *Y. Tsiang 8009* (*A, W, Y*), *9289* (*W*), *9290* (*V*), *9349* (*A, W*).

KWANGSI: *S. K. Lau 28587* (*A, W*); *Steward & Cheo 42* (*A, Y*); *C. Wang 40889* (*A*), *40912* (*A*).

KWANGTUNG: *S. K. Lau 2734* (*A*); *W. T. Tsang 24851* (*A*), *25044* (*A*).

SZECHWAN: *W. C. Cheng 2940* (*A, W, Y*); *S. S. Chien 5074* (*A*), *5557* (*A*), *5655* (*A*); *C. S. Fan & class 74* (*A*), *129* (*A*);

W. P. Fang 218 (*A, W*), *2036* (*A*), *5829* (*A*); *Liu Yu-shih 1778* (*A*); *Rock 12019* (*A, C*); *Schneider 4063* (*A*); *F. T. Wang 20435* (*A*), *20436* (*A*), *20505* (*A*), *22622* (*A*), *23172* (*A, W*), *23660* (*A, W*), *23661* (*A, W*); *Wilson* (*Arn. Arb. Exped.*) *4605* (*A, W*); *T. T. Yu 255* (*A*), *290* (*A*), *548* (*A*).

YUNNAN: *Forrest 544* (*E*), *573* (*A*), *4706* (*E*), *7572* (*A, E*), *7587* (*E*), *8492* (*A, E*), *8513* (*A, E*), *8614* (*E*), *9347* (*A, E*), *9348* (*A, E*), *9425* (*A, E*), *9565* (*W*), *9631* (*A, E*), *9673* (*A, E*), *9791* (*E*), *11290* (*A*), *11456* (*A*), *13495* (*E*), *13673* (*E*), *15301* (*E*), *15694* (*A*), *16014* (*A*), *16181* (*A*), *16189* (*A*), *17180* (*E*), *17182* (*A*), *20955* (*E*), *22243* (*A, W*), *23453* (*W*), *25242* (*E*), *26189* (*W*), *26192* (*W*), *26193* (*W*), *26219* (*A*), *26228* (*A, W*), *26267* (*A*), *26284* (*A, W*); *Handel-Mazzetti 32* (*A*); *Henry 9173B* (*A, M, W*), *9173C* (*A, M, W, Y*), *9173D* (*A, Y*), *9173E* (*A, Y*), *13037* (*Y*), *13270* (*A, Y*), *13311* (*A, M, Y*); *Rock 4071* (*A, C, W*), *6200* (*A, C, W*), *7001* (*A, C, W*), *7294* (*A, W*), *7347* (*A, C, W*), *7523* (*A, W*), *7576* (*A, W*), *7625* (*A, C, W*), *7891* (*A, C, W*), *7965* (*A, C*), *8098* (*A, C, W*), *8901* (*A, C, W*), *10557* (*A, C, W*); *Schneider 368* (*A*), *384* (*A*); *S. Ten 356* (*A, C, W*), *571* (*A, W*), *573* (*A, W*); *H. T. Tsai 51516* (*A*), *51518* (*A*), *51680* (*A, W*), *51705* (*A*), *51708* (*A*), *51788* (*A*), *52144* (*A, W*), *52354* (*W*), *52355* (*A*), *53019* (*A*), *53034* (*A*), *54351* (*A*), *54417* (*A*), *54476* (*A, W*), *54519* (*A*), *54576* (*A*), *54592* (*A*), *54595* (*A*), *54744* (*A*), *54760* (*A*), *54800* (*A*), *54941* (*A, W*), *55004* (*A*), *55530* (*A, W*), *55555* (*A*), *55601* (*A*), *55631* (*A*), *55705* (*A, W*), *55707* (*A*), *55739* (*A*), *55885* (*A*), *55996* (*A*), *56370* (*A*), *56376* (*A*), *56404* (*A*), *56475* (*A, W*), *56520* (*A*), *56585* (*A, W*), *56613* (*A*), *56824* (*A*), *56967* (*A, W*), *56998* (*A, W*), *57123* (*A*), *58529* (*A*), *58835* (*A*), *58838* (*A, W*), *59036* (*A*), *59094* (*A*), *59820* (*A*); *C. W. Wang 64149* (*A, W*), *64291* (*A, W*), *66600* (*A, W*), *66865* (*A*), *66984* (*A, W*), *67253* (*A, W*), *67315* (*A, W*), *71819* (*A, W*), *71821* (*A, W*), *71823* (*A, W*), *71977* (*A, W*), *72047* (*A, W*), *72072* (*A, W*), *72177* (*A, W*), *72317* (*A, W*), *72414* (*A, W*), *72475* (*A, W*), *72505* (*A, W*), *72532* (*A, W*), *72587* (*A, W*); *T. T. Yü 10906* (*A*).

TIBET: *Forrest 19840* (*A, W*).

This species of western and westcentral China is readily distinguished from *M. africana* by its larger leaves and glabrous branchlets, and from *M. marginata* and *M. elliptica* by its generally serrate leaf margins and by its petioles, which are distinctly decurrent on the branchlets, as well as by its broad, fimbriate stigmas and large anthers.

Uncertain Species

MYRSINE THUNBERGII Tanaka.

Myrsine Thunbergii Tanaka, Bult. Sci. Fak. Terk. Kjusu Univ. 1 (1925) 201.

Professor T. Tanaka, in this critical treatment of the Japanese plants in the Thunberg herbarium in Upsala, Sweden, published *Myrsine Thunbergii* "n. nom." for part of the material previously called *Laurus glauca* Thunb. Nakai (45, p. 322) has placed this species as a synonym of *Bobua glauca* Nakai comb. nov. (*Laurus glauca* Thunb.). The illustration shows that *Bobua glauca* is not a member of the Myrsinaceæ. The citation there given is: "*Myrsine Thunbergii* Tanaka, in Memorial papers of 150 anniversary of Thunberg's journey to Japan, p. 34 (1925)." However, this work is unknown to the writer, and, in a letter to him from Professor Tanaka under date of April 13, 1931, reference for this name was given as the Bult. Sci. Fak. Terk. Kjusu Univ. In this letter Professor Tanaka also states that this name is a synonym of *Rapanea neriifolia* Mez. As the Thunberg specimens have not been examined, this name cannot be definitely placed, although it is probably correctly placed as a synonym of Mez's species.

Excluded Species

1. MYRSINE ARDISIOIDES Hook. and Arn.

Myrsine ardisioides Hook. & Arn., Bot. Beechey's Voy. (1841) 197.

This species, described from China, presumably from Hongkong, without mention of specimens and doubtfully placed in this family, is doubtfully referred by Mez to *Sabia* sp. in the Sabiaceæ. (43, p. 396) It obviously does not belong in the Myrsinaceæ.

2. MYRSINE BUXIFOLIA Hance.

Myrsine buxifolia Hance, Ann. Sci. Nat. IV Bot. 15 (1861) 225.

This species, based on a collection by C. F. M. DeGrijs from Fukien, cited by Mez as de Grijs in Herb. Hance, *no. 6687* and transferred as *Rapanea buxifolia* (Hance) Mez, (43, p. 362) was found by E. D. Merrill, on examination of the type, to be the same as *Distylium strictum* Hemsl. in the Hamamelidaceæ. (41, p. 251)

3. MYRSINE CAVALERIEI Léveillé.

Myrsine Cavaleriei Léveillé, Repert. Sp. Nov. Fedde 10 (1912) 376.

The type, *Cavalerie 2345* from Kweichow in the Léveillé herbarium, has not been examined. There is a photograph at the Arnold Arboretum of *Cavalerie 579* (without locality though

probably from Kweichow) in the Léveillé herbarium, originally determined by Léveillé as *Myrsine Cavaleriei.* This photograph shows that the specimen does not belong in the Myrsinaceæ. It was not included in A. Rehder's treatment of the woody species described by Léveillé.

4. MYRSINE CHAFFANJONI Léveillé.

Myrsine Chaffanjoni LÉVEILLÉ, Fl. Kouy-Tcheou (1914–1915) 287.

This species, based on *Chaffanjon & Bodinier 2048,* has been referred by A. Rehder to *Microtropis fokienensis* Dunn in the Celastraceæ. (50, 15 p. 116)

5. MYRSINE CHEVALIERI Léveillé.

Myrsine chevalieri LÉVEILLÉ, Fl. Kouy-Tcheou (1914–1915) 287.

This species, based on *J. Esquirol 2593,* has been referred by A. Rehder to *Sarcococca Hookeriana* var. *humilis* Rehd. and Wils. in the Buxaceæ. (50, 14 p. 235).

6. MYRSINE ESQUIROLII Léveillé.

Myrsine Esquirolii LÉVEILLÉ, Repert. Sp. Nov. Fedde 12 (1913) 186.

A photograph and fragment at the Arnold Arboretum of the type in the Léveillé herbarium, *J. Esquirol 2625* from Kweichow, show this to be *Maesa japonica* (Thunb.) Moritzi.

7. MYRSINE FEDDEI Léveillé.

Myrsine Feddei LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 376.

This species, based on *Cavalerie 842* from Kweichow in the Léveillé herbarium, has been referred by A. Rehder to *Ilex metabaptista* var. *myrsinoides* (Léveillé) Rehd. (50, 14 p. 240)

6. Genus RAPANEA Aubl.

Rapanea AUBL., Pl. Guian. 1 (1775) 121, *pl. 46.* Based on *Rapanea guianensis* Aubl.
Athruphyllum LOUR., Fl. Cochinch. (1790) 120; ed. Willd. (1793) 148. Based on *Athruphyllum lineare* Lour.

Flowers perfect or dioecious, 1 to 4 mm long, 4- or 5- (rarely 6-) merous; sepals shortly united at base, imbricate or valvate, persistent, usually papillose or sometimes almost glabrous on margin; petals shortly united at base, usually densely papillose on margin and within; stamens inserted on throat of corolla or bases of lobes, the filaments very short or almost obsolete, the anthers ovate or sagittate, equal to or shorter than corolla lobes, dehiscing by longitudinal slits; pistil wanting in male flowers, in female flowers with ovoid ovary, the style very short or wanting, the stigma elongate-ligulate, somewhat flattened, usually

curved, apex sometimes cleft; fruit a globose or ovoid 1-seeded berry with crustaceous or coriaceous endocarp, the seed with a hollow base, the albumen horny, not at all or scarcely ruminate, the embryo elongate, transverse.

Glabrous trees or shrubs, the leaves entire, more or less punctate, the inflorescences umbellate or fasciculate on short scaly branches, spurs, or knobs, these axillary among leaves or on older naked branches.

Species nearly 140, in tropical and subtropical or warm temperate regions of both hemispheres, 6 species in eastern Asia.

This genus was originally described from British Guiana. Mez in his monograph transferred to it many Asiatic species formerly placed in *Myrsine*, thus making it both a New World and an Old World genus. This interpretation is accepted here but not by all authors (*see* discussion of *Myrsine*, p. 185).

Key to the eastern Asiatic species of Rapanea.

a 1. Leaves acuminate or slender-acute; branchlets very slender.
  b 1. Lateral nerves distinct, raised, forming with veinlets a distinct reticulum; leaves about 4 cm long, under 1 cm wide..... 1. *R. affinis.*
  b 2. Lateral nerves indistinct, not raised and forming a reticulum with veinlets; leaves 6 cm long or longer, 1.5 cm wide or wider. 2. *R. Faberi.*
a 2. Leaves shortly acute, obtuse, rounded or retuse.
  b 1. Branchlets distinctly thick (5 to 7 mm in fruit) and stiff; pedicels in fruit 5 to 7 mm long..... 3. *R. kwangsiensis.*
  b 2. Branchlets not thick and stiff; pedicels in fruit not over 4 mm long.
    c 1. Leaves broadly obtuse or rouned or slightly retuse at apex; sepals very minutely papillose; fruit 4 mm in diameter or less.
      d 1. Flowers 4- or 5-merous; fruit longitudinally striate; southern China ..... 4. *R. linearis.*
      d 2. Flowers usually 5-merous; fruit reticulate, wrinkled; Bonin and Liu Kiu Islands..... 5. *R. maximowiczii.*
    c 1. Leaves acute or obtuse at apex; sepals usually distinctly papillose on margin; fruit 4 to 6 mm in diameter.
      d 1. Blade narrowly oblong-lanceolate or oblanceolate, averaging 10 cm in length; mostly eastern ..... 6. *R. neriifolia.*
      d 2. Blade generally elliptic-ovate or -lanceolate, averaging 12.5 cm in length; western..... 6*a*. *R. neriifolia* var. *yunnanensis.*

1. RAPANEA AFFINIS (Blume) Mez.

Myrsine affinis A. DC., DC. Prodr. 8 (1844) 96. Based on a specimen in the Paris herbarium named "*Ardisia affinis* Blume," a name which appears only in synonymy in loc. cit.

Rapanea affinis Mez in Engl., Pflanzenreich 9 (IV. 236) (1902) 358. Based on *Myrsine affinis* (Blume) A. DC.

A small tree up to 6 m high, the branchlets slender, glabrous or minutely puberulent when young, becoming grayish; leaves with grooved or narrowly winged petiole 5 mm long, the blade coriaceous, lanceolate, long-acute at base, long-acuminate or acute at apex with rounded tip, about 4 cm long, 0.8 to 1 cm wide, shining brownish-green above, scarcely paler beneath, not at all punctate or with a few obscure punctate dots beneath, the midrib prominent beneath, the lateral nerves rather numerous, uniting in a distinct marginal nerve, forming with veinlets a distinct raised reticulum, slightly more prominent above than beneath; inflorescences umbellate on short, verrucose, axillary branches, 1- to 5-flowered, shorter than petioles, the imbricate bracts ovate, ciliate, the pedicels 2 mm long or less, glabrous; flowers usually 4-merous, about 2.5 mm long; sepals shortly united at base, the lobes ovate, acute, entire or ciliate, punctate with a few black dots near apex; petals united at base, about three times length of sepals, oblong, punctate with black dots near apex, especially at margin, densely papillose within and on margin; stamens shorter than petals, the anthers obtuse, apiculate at least when young; pistil unknown; fruit globose, 3- to 4 mm in diameter, brownish, longitudinally ribbed, glandular-punctate.

Hainan and Java.

HAINAN: *C. C. C. 18103* (*W, Y*); *N. K. Chun & C. L. Tso 44058* (*W, Y*); *Fenzel 168* (*V*); *S. K. Lau 3116* (*A*), *25432* (*A, W*), *27253* (*A*); *H. Y. Liang 65246* (*Y*).

The cited specimens agree well with a specimen in the New York Botanical Garden collected by Doctor Kollman in Java in 1833 and labeled *Rapanea affinis*. The Java specimen differs from the Hainan specimens in having thicker stems, flowers with pedicels nearly 5 mm long, and larger leaves, up to 7 cm long. The specimens here cited agree well with DeCandolle's and Mez's descriptions, except in some of the particulars noted. Until the type can be examined [65] it may reasonably be assumed that the Kollman specimen represents this species as it occurs in Java. The variations in the Hainan specimens are insufficient to justify the establishment of a new species.

In Mez's monograph this species is given as *Rapanea affinis* (A. DC.) Mez, because it was overlooked that in DeCandolle's Prodromus (8, p. 96) the specific name was recognized as coming

[65] DeCandolle states that the type is in the Paris herbarium, but recent search has failed to reveal it.

from *Ardisia affinis* Blume, an unpublished name, presumably found on a specimen in the Paris herbarium.

2. RAPANEA FABERI Mez. **Text fig. 36.**

Rapanea Faberi MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 358. Based on *Faber 132* from Kwangtung in the Berlin herbarium. Duplicates have been examined.

FIG. 36. *Rapanea Faberi* Mez. *a*, branchlet with fruiting inflorescences, × ½; *b*, fruit, × 5. Drawn from a type collection, *Faber 132* (*Y*).

A tree about 3 m high, the branchlets rather slender, dark gray or blackish, glabrous; leaves with channeled petiole about 1 cm long, the blade chartaceous to coriaceous, elliptic to elliptic-lanceolate or lanceolate, acute or attenuate at base, slenderly acuminate at apex, 6 to 14 cm long, 1.5 to 3.5 cm wide, somewhat shining above, paler beneath, punctate along margin beneath, rarely so slewhere, the midrib prominently raised beneath, the lateral nerves inconspicuous, uniting in a marginal

nerve; inflorescences fasciculate on short, densely scaly branches or knobs in axils of leaves or of leaf scars below leafy parts of branches, the scales obtuse, somewhat papillose on margin, the pedicels 1 to 2 mm long; thick; flowers white, 5-merous; sepals shortly united at base, 1 mm long or less, ovate, acute or rounded, finely papillose on margin, glandular punctate, spreading or reflexed in fruit; petals oblong, nearly 3 mm long, punctate, papillose on margin and within; stamens in male flowers nearly equaling petals, the anthers large; pistil unknown; fruit globose or obtusely conical, 4 to 6 mm in diameter, longitudinally lined, not punctate.

Hainan and western China.

HAINAN: *F. C. How 73587* (*A, W*)*?, 73660* (*A, W*); *S. K. Lau 25458* (*A, W*), *26374* (*A, W*); *Nanking, Herb. Univ. 7126* (*C*)*?; C. Wang 35231* (*A, W*), *35612* (*A, W*).

SZECHWAN: *Faber 132* (*120?*)[66] (*A, Y*).

YUNNAN: *Forrest 24763* (*W*); *Henry 9173A* (*A, M, Y*); *H. T. Tsai 52458* (*A, W*), *56919* (*A, W*); *Y. Tsiang 3415* (*Su*).

This species is distinguished with some difficulty from *R. neriifolia* by its slenderer branchlets and acuminate leaves. The sepals in fruit are generally reflexed.

3. RAPANEA KWANGSIENSIS Walker. Text fig. 37.

Rapanea kwangsiensis WALKER, Journ. Washington Acad. Sci. 21 (1931) 479, fig. 4. Based on *Ching 6657* from Lan-low, eastern Lin-yen, Kwangsi, in the United States National Herbarium.

A small tree or shrub 6 m high, the branchlets thick, the bark light gray [*ex S. W. Teng 90825*], glabrous; leaves petiolate (1 to 2 cm), the blade coriaceous, obovate, gradually tapering to an acute base, broadly acute to obtuse or almost rounded at apex, 11 to 22 cm long, 4 to 7 cm wide, dark green above, slightly paler beneath, not punctate except obscurely so along margin beneath, glabrous; midrib very prominently raised beneath, the lateral nerves very fine, nearly straight, uniting in a marginal nerve; inflorescences umbellate on short, densely scaly spurs or knobs, axillary among leaves or above the rather prominent leaf scars

[66] The specimen in the herbarium of the New York Botanical Garden is labeled "no. 120, 132." A specimen in the herbarium of the Arnold Arboretum is labeled "no. 120." Mez cites *Faber 132* from Berlin or Vienna, and his description agrees with the American specimens. However, *Henry 120* is listed as *Rhamnus crenatus* in "Kew Determinations of Dr. Aug. Henry's Chinese plants," a manuscript work of which there is a hectographed copy in the Smithsonian Library.

FIG. 37. *Rapanea kwangsiensis* Walker. Portion of branch with leaf and fruiting inflorescences, × 1. Drawn from the type, *Ching 8657* (*W*).

on older portions of branch, few-flowered, developing 1 to 3 fruits, the scales obtuse, entire, sometimes fringed, the pedicels rater slender, 5 to 8 mm long; flowers 5- or 6-merous; sepals united $\frac{1}{3}$ to $\frac{1}{2}$ their length, ovate, acute, 2 mm long, entire, sometimes finely papillose on margin, otherwise glabrous, not distinctly punctate; petals united $\frac{1}{3}$ their length, about 4 mm long, narrowly oblong-lanceolate, rounded or acute at apex, punctate on back, papillose on margin and within; stamens in female flowers with short filaments attached at or just above throat of corolla tube, the anthers shorter than petals, sagittate, apiculate, unknown in male flowers; pistil with ovoid ovary, the style very short, the stigma about as long as or slightly longer than petals, flattened-ligulate, sometimes cleft at apex; fruit globular, 4 to 5 mm in diameter, purplish, longitudinally lined with elongate punctate glands.

Southern China.

KWANGSI: *Ching 6657* (*W, Y*); *S. P. Ko 55752* (*A, W*).

KWEICHOW: *Handel-Mazzetti 10376* (*V*)?[67]; *S. W. Teng 90825* (*A*).

This species may be easily distinguished from other Chinese species of the genus by its thicker stems, its clearly obovate, large leaves with a gradually tapering base, and its fruits with longer pedicels. The type specimen, though in fruit, bears a few dried pistillate flowers from which the above flower description was drawn. It was collected on the expedition sent into Kwangsi in 1928 by the Metropolitan Museum of Natural History, Nanking, China.

4. RAPANEA LINEARIS (Lour.) S. Moore.

Athruphyllum lineare LOUR., Fl. Cochinch. (1790) 120; ed. Willd. (1793) 148. Originally described from Cochin China. The type in the herbarium of the British Museum was examined by Dr. E. D. Merrill in 1930.(40, p. 800)

Myrsine linearis POIRET, in Lam, Encycl. Suppl. 3 (1813) 709. Based on *Athruphyllum lineare* Lour.

Myrsine Playfairii HEMSL., Journ. Linn. Soc. Bot. 26 (1889) 61. Based on *Playfair 253* from Pakhoi, Kwangtung. A duplicate has been examined.

Rapanea Playfairii MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 361. Based on *Myrsine Playfairii* Hemsl.

Rapanea linearis S. MOORE, Journ. Bot. Brit. & For. 63 (1925) 249. Based on *Athruphyllum lineare* Lour.

[67] A sterile specimen with larger leaves and possibly representing a juvenile shoot.

A densely branching shrub in thickets or forests, glabrous throughout, the branchlets somewhat thick, grayish; leaves mostly clustered at ends of branches, the petiole about 4 mm long, the blade coriaceous, obovate, oblanceolate or rarely elliptic-lanceolate, cuneate at base, generally rounded or broadly obtuse at apex, sometimes acute, 3 to 7 cm long, 1 to 3 cm wide, brownish or olive-green above, paler beneath, glabrous, the midrib prominently raised beneath, the lateral nerves numerous, fine, inconspicuous; inflorescences fasciculate or umbellate, 2- to 4-flowered, on short verrucose spurs, these originally axillary among upper leaves, becoming conspicuously clustered especially in fruit along naked stems, the pedicels scarcely 4 mm long; flowers 4- or 5- (rarely 6-) merous; sepals ovate, obtuse, about 1 mm long, minutely ciliate, glabrous; petals nearly 3 mm long, oblong-ovate, glabrous outside, densely papillose within; stamens nearly equaling petals, anthers elliptic, subsessile; pistil unknown; fruit globose, 3 to 4 mm in diameter, light grayish, the surface mostly longitudinally wrinkled and somewhat punctate.

South China and Annam.

FUKIEN: *H. H. Chung 4551* (*A*), *4570* (*A*).

HAINAN: *N. K. Chun & C. L. Tso 44793* (*A, W, Y*); *Gressitt 897* (*A*), *989* (*A*); *F. C. How 71442* (*A, W*), *73345* (*A*), *73828* (*A, W*); *F. C. How & N. K. Chun 70063* (*A, W, Y*); *S. P. Ko 52136* (*A, W, Y*); *S. K. Lau 354* (*A, Y*), *3336* (*A*), *5910* (*A, W*), *27710* (*A, W*); *C. I. Lei 301* (*W, Y*), *972* (*W, Y*); *H. Y. Liang 62859* (*W, Y*), *65421* (*W, Y*); *C. L. Tso 23051* (*A, W, Y*); *C. Wang 32757* (*W, Y*), *35055* (*W, Y*).

KWANGTUNG: *Playfair 253* (*Y*); *Y. Tsiang 2543* (*Y*).

KWANGSI: *H. Y. Liang 69329* (*A*).

This species may generally be recognized by its oblanceolate or obovate leaves, which usually are rounded at the apex.

5. RAPANEA MAXIMOWICZII Koidzumi.

Rapanea Maximowiczii KOIDZUMI, Bot. Mag. Tokyo 32 (1918) 250. Based on *S. Nishimura 82, 48,* and *111* from Chichishima, Bonin Islands. The type, probably in the Tokyo herbarium, has not been examined.

A glabrous shrub or small tree about 2 m high, the trunk 15 to 18 cm in diameter, the branchlets stiff, grayish or black; leaves more or less clustered at ends of branches, the petiole about 5 mm long, blade coriaceous, elliptic- or oblong-lanceolate to oblanceolate, acute and somewhat decurrent at base, rounded or retuse or broadly obtuse at apex, about 7 cm long, 2 cm wide, ranging

from 4 to 11 cm long, 1 to 3 cm wide, entire with recurved edge, shining above, somewhat paler beneath, the midrib prominent, the lateral nerves very fine, obscure; inflorescences fasciculate on very short scaly branches or knobs in axils of leaves or of leaf scars below leaves, 3- to 6-flowered, scarcely 3 mm long, the scales very broad, obtuse, obscurely papillose or ciliate or eciliate, the pedicels thick, scarcely 1 mm long or wanting; flowers white, usually 5- sometimes 4-merous; sepals nearly free, ovate to triangular, acute, glabrous or very minutely papillose, thickened in fruit; petals [68] shortly united at base, about 2 mm long, elliptic-oblong, somewhat obtuse, sparingly punctate with rounded or linear-elongate dots; pistil with ovoid ovary and minute style, the stigma ligulate, probably curved;[69] fruit globose, 4 mm in diameter, grayish, reticulately wrinkled.

BONIN ISLANDS: *T. Nakai*, June 30, 1920 (*W*); *Wilson 8269* (*A*), *8345* (*A*, *W*).

LIU KIU ISLANDS: *Wright 186* (*W*).

This species seems quite distinct from *R. neriifolia* in its obtuse or rounded leaves, its very short or almost obsolete pedicels, its smaller, thicker (in fruit), and less papillose sepals, and its reticulate, wrinkled fruit. Resembles *R. linearis* in its rounded leaves, yet it differs in the smaller, more triangular sepals and reticulate, wrinkled fruit.

6. **RAPANEA NERIIFOLIA** (Sieb. & Zucc.) Mez.

Myrsine neriifolia SIEB. & ZUCC., Abh. Bayer. Akad. Math.-Phys. 4 [2] (1846) 137. Described from Japan, probably based on collections by Siebold. Possible duplicates have been examined.

Myrsine capitellata WALL. in Roxb., Fl. Ind. ed Carey 2 (1824) 295, misapplied by Bentham in Flora Hongkongensis (1, p. 205) and by Matsumura and Hayata.(37 p. 225) None of the specimens cited nor the type of *M. capitellata* have been seen, but the use of this name for Chinese and Formosan specimens is probably incorrect.

Myrsine Seguini LÉVEILLÉ, Fl. Kouy-Tcheou (1914–1915) 288. Based on *Bodinier* (*Seguin*) *2253* in the Léveillé herbarium. A duplicate has been examined.

Rapanea neriifolia MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 361. Based on *Myrsine neriifolia* Sieb. & Zucc.

Rapanea Walkeriana HAND.-MAZZ., Symb. Sin. pt. 7 (1936) 760. Based on *Handel-Mazzetti 10274* from Kweichow in the Vienna

[68] Since no flowering specimens are available the characters of the petals, stamens, and ovary are taken from the original description by Koidzumi.

[69] The original description gives the style as 1 mm long and the stigma as punctiform, but the stigmas and styles remaining on the fruiting specimens examined do not agree, being as described above.

herbarium. The type has been examined; it has more densely glandular leaves and fruits and broader leaves with more conspicuous nerves and shorter pedicels, but the writer regards these characters as not sufficiently distinct to justify the establishment of a new species, in which opinion Prof. A. Rehder at the Arnold Arboretum concurs.

A shrub 2 to 5 m high or a small tree up to 12, m, the branchlets somewhat thick, grayish, glabrous; leaves petiolate (about 1 cm), the blade coriaceous, oblong-lanceolate or oblanceolate, cuneate or acute at base, more or less decurrent on petiole, acute or nearly obtuse or scarcely acuminate at apex, averaging 10 cm long. 2.2 cm wide, ranging from 5.8 to 14.5 cm long, 1.3 to 2.6 cm wide, shining or dull green above, somewhat paler beneath, usually becoming distinctly fuscous, the midrib prominent beneath, lateral nerves numerous, inconspicuous, the veinlets very obscure, reticulate; inflorescences umbellate or fasciculate, on short, verrucose branches or spurs, in axils of older leaves or of leaf scars on more or less naked second year's growth, 3- to 7-flowered, the scales ciliate, the pedicels 2 to 3 mm long or longer especially in fruit; flowers white or greenish, 2 to 3 mm long; sepals free almost to base, ovate, acute to obtuse or sometimes rounded, about 1 mm long, ciliate, sometimes punctate on back; petals spreading or reflexed, united about $\frac{1}{4}$ their length, 2 to 2.5 mm long, elliptic or oblong, obtuse or rounded, usually black-punctate, glabrous on back, densely papillose within and on margin; stamens in female flowers reduced, in male flowers with very short filaments attached at or above throat, the anthers nearly equaling petals, ovate or sagitate, not punctate, usually minutely papillose at apex; pistil with ovoid or ellipsoid ovary, the style very short, the stigma prominent, as long as or longer than petals, flattened, sometimes split at apex; fruit subglobose, apiculate from the persistent style, 4 to 5 mm in diameter, greenish gray or darker, somewhat longitudinally striate and glandular punctate, the pedicels 2 to 7 mm long.

Eastern Asia from Indo-China to Japan.

SOUTHWESTERN JAPAN: *Faurie 3807* (*A, Y*), *4802* (*A*); *C. Masamune,* August 29, 1926 (*Y*); *Oldham 550* (*G*), *551* (*G*); *Siebold,* in 1840[70] (*M*), in 1842 (*G*);[71] *Watanabe,* April 11, 1887 (*G*), April 30, 1887 (*C*), September 21, 1889 (*G*); *Wilson 6077* (*A, G, W*), *6088* (*A, W*), *8386* (*A*).

[70] Possibly a type collection.

[71] Originally from the Zuccarini herbarium.

LIU KIU ISLANDS: *Faurie 3807* (*A, Y*); *R. Kanehira 3266* (*Y*), *3315* (*Y*), *3361* (*Y*); *Wilson 8074* (*A, W*).

FORMOSA: *Faurie 1637* (*A*), *1638* (*A*); *Formosa, Herb. Gov't. W303* (*A*); *Henry 1250* (*A, Y*); *Taihoku Imp. Univ., Herb. 17760* (*A*), *17805* (*A*); *Wilson 10141* (*A, W, Y*).

CHEKIANG: *Ching 1849* (*A, C, G, W*), *2049* (*A, C, Na, W, Y*), *2481* (*A, C, NA, W*); *Y. L. Keng 227* (*A*); *Nanking, Herb. Univ. 7328* (*C*).

KIANGSI: *Gressitt 1594* (*A*).

FUKIEN: *Luetta Chen 81* (*A*); *H. H. Chung 2278* (*A, Am, C*), *3211* (*Am, C*), *3497* (*A, Am, C, Y*), *3699* (*A, Am*), *6792* (*A*), *7767* (*A*), *8092* (*A*), *8467* (*A*); *Fong 84* (*C*); *Fukien Christ. Univ. 1521* (*C*), *2395* (*C*), *7410* (*C*); *13245* (*C*), *13603* (*C*); *Hongkong Bot. Gard., Herb. 2891* (*A*); *Warburg 5770* (*A*).

HONGKONG: *W. Y. Chun 5010* (*C*), *5170* (*A, C*), *6988* (*A, Y*), *7516* (*Y*); *Hance 130* (*F*); *C. Wang 32373* (*Y*); *Wilford 352* (*F*); *Wright 204* (*G, Y*).

HAINAN: *N. K. Chun & C. L. Tso 43689* (*A, Y*), *44239* (*A, Y*), *44320* (*A, Y*), *44363* (*A, Y*); *F. C. How & N. K. Chun 70170* (*A, W, Y*); *S. K. Lau 2918* (*A*), *5202* (*A, W*), *6146* (*A, W*); *H. Y. Liang 63675* (*A, Y*), *63680* (*W, Y*), *63713* (*W, Y*), *63746* (*Y*), *64207* (*Y*); *C. Wang 35220* (*W, Y*), *35502* (*W, Y*), *35909* (*Y*), *35941* (*W, Y*).

HUNAN: *W. T. Tsang 23488* (*A, W*).

KWANGTUNG: *C. C. C. 6567* (*NA, Y*), *6871* (*NA, Y*), *12092* (*C, NA, W*), *19778* (*Y*); *N. K. Chun 40446* (*A, Y*); *W. Y. Chun 4821* (*A, C*), *6313* (*A*), *6508* (*A, C*); *Fenzel 114* (*C*); *Gressitt 1742* (*A*); *H. T. Ho 60029* (*Y*); *S. P. Ko 50263* (*A, Y*), *51798* (*A*); *S. K. Lau 1966* (*A*); *T. N. Liou 880* (*Y*); *Y. W. Taam 391* (*A*), *414* (*A*), *676* (*A*), *750* (*A*); *W. T. Tsang 20206* (*A, Y*), *21146* (*NA, Y*), *21713* (*A, NA, Y*), *22054* (*A, W*), *24949* (*A*); *T. M. Tsui 243* (*W, Y*); *Y. Tsiang 596* (*A, C*), *783* (*C*), *803* (*A*); *C. Wang 31169* (*A*); *Y. K. Wang 508* (*C, V*), *519* (*A, C, V*).

KWANGSI: *Ching 7962* (*Su, V, Y*), *8133* (*A, W, Y*), *8217* (*A, W, Y*), *8267* (*A, W, Y*), *8428* (*A, W, Y*); *H. Y. Liang 69543* (*A, W*); *W. T. Tsang 24073* (*A*), *24603* (*A*), *24620* (*A*), *24713* (*A*); *C. Wang 39083* (*A, W*), *39122* (*A*), *39384* (*A*), *39444* (*A, W*), *39953* (*A*), *40093* (*A*).

KWEICHOW: *Bodinier 2253* (*A*); *Handel-Mazzetti 10274* (*A, W*); *S. W. Teng 90403* (*A*).

YUNNAN: *H. T. Tsai 51852* (*A, Fa*), *54531* (*A, W*).

The Chinese and Japanese specimens of this species have in the past been frequently labeled as *Myrsine capitellata* Wall., doubtless largely because of Bentham's misinterpretation in his Flora Hongkongensis.(1) The species is confused in Mez's monograph with *Rapanea linearis* (Lour.) S. Moore, there considered as *R. Playfairii* (Hemsl.) Mez.

6a. RAPANEA NERIIFOLIA var. YUNNANENSIS (Mez) Walker.

Rapanea yunnanensis MEZ in Engl., Pflanzenreich 9 (IV. 236) (1902) 358. Based on *Henry 11570, 11570B,* and *11570C* from Yunnan in the Berlin herbarium. Duplicates have been examined.

Rapanea neriifolia var. *yunnanensis* WALKER, Bull. Fan Mem. Inst. Biol. 9 (1939) 189. Based on *Rapanea yunnanensis* Mez.

A shrub up to 6 m high or occasionally a tree reaching 15 m, the branchlets somewhat thicker than in typical form of species; leaf blades generally elliptic-ovate, sometimes oblong-lanceolate, averaging 12.5 cm long, 3.5 cm wide, ranging from 7 to 16 cm long, 2.5 to 6 cm wide; inflorescences up to 10-flowered, flowers 3 to 4 mm long, the pedicels in fruit up to 5 mm long; fruit up to 6 mm in diameter; western; otherwise indistinguishable from the species.

Chiefly southwestern China.

ANHWEI: *S. S. Chien 1033 (Am).*

KWANGSI: *Ching 8244 (W); H. Y. Liang 69350 (A, W); W. T. Tsang 22249 (A, W), 22561 (A, W).*

YUNNAN: *Forrest 945 (E), 7534 (E), 7624 (E), 9235 (E), 9495 (A, E), 11036 (A, E), 11442 (E), 11813 (A, W), 12696 (W), 16100 (A), 17072 (A), 28048 (E); Handel-Mazzetti 6300 (V), 8601 (A, V), 13019 (A, V, W); Henry 11570 (A, W, Y), 11570A (A), 11570B (A, W, Y), 11570C (A, Y); Rock 2603 (A, W, Y), 2753 (A, C, W), 2788 (A, C, W), 2984 (A, W), 7704 (A, C, W), 8106 (A, C, W, Y); Schneider 288 (V); Simeon Ten 307 (W), 317 (A, W), 328 (C, A); H. T. Tsai 52525 (A), 52862 (A), 53193 (A, W), 53245 (A), 53445 (A), 56650 (A), 56701 (A), 62153 (A, Fa); Y. Tsiang 12015 (Su), 12363 (Su); C. W. Wang 71941 (A, W), 72402 (A, W), 73303 (A, W), 77402 (A, W).*

SZECHWAN: *Handel-Mazzetti 1119 (V, W).*

The western specimens, which have generally been considered as *Rapanea yunnanensis* Mez, are distinguishable from the eastern specimens largely in their more robust appearance, with less slender leaves and slightly larger inflorescences. A comparison of Mez's description of *R. yunnanensis* with that of *R. neriifolia*

(Sieb. & Zucc.) Mez shows differences in size and number only. Because of variations his key characters are inadequate to differentiate these species. Since the differences are only those of degree, it seems advisable to consider the western form a variety only.[72]

UNCERTAIN SPECIES

RAPANEA OKABEANA Tuyama.

Rapanea Okabeana TUYAMA, Bot. Mag. Tokyo 52 (1938) 465. Based on *Takasi Tuyama*, March 2, 1938, collected in "Bonin: Titizima in silvis siccis in Takeda-bokuzô," in the herbarium of the Imperial University of Tokyo.

The author of this species has kindly sent the writer a specimen collected by himself on this same island March 1, 1938. The comments following the original description of this species are: "Ad *Rapanea Maximowiczii* affinis sed ex omnibus partibus minor et caulis ramosissima, et exqua foliis minoribus lineis resiniferis destitutis sed punctulis nigro-violascentibus dense obtectis, floribus sparsis minoribus bene distinguetur." Professor Tuyama has added in a letter to the writer the following information: "*Rapanea Okabeana* (dedicated to Mr. Okabe, the forestry officer of the Islands) and *R. Maximowiczii* grow mixed in low sclerophyllous forests of Takeda-bokuzyô, Ins. Titizima. *R. Maximowiczii* has a wider distribution on the Islands, but *R. Okabeana* is restricted in a small area. These two Bonin species are not ecological varieties. At a glance the ramification is very different. The former [*R. Okabeana*] is a low shrub with branchlets furcating repeatedly forming a round and dense surface of foliage while the latter [*R. Maximowiczii*] is a small tree with erect and lax branches." Because of the scarcity of specimens of *R. Maximowiczii* available for this study, the writer cannot certainly verify the recorded differences.

EXCLUDED SPECIES

1. **RAPANEA AUREA Léveillé.**

Rapanea aurea LÉVEILLÉ, Repert. Sp. Nov. Fedde 10 (1912) 376.

This species, based on *Cavalerie 839* and *841* from Kweichow, has been referred by A. Rehder to *Eurya nitida* Korth. in the Theaceæ.(50, 15 p. 99)

[72] It was decided to consider this variety distinct after many of the specimens borrowed for these studies had been returned. Hence, the annotation labels on the western specimens mostly bear the name *Rapanea yunnanensis* Mez.

2. RAPANEA BUXIFOLIA (Hance) Mez.

Rapanea buxifolia (Hance) Mez in Engl., Pflanzenreich 9 (IV. 236) (1902) 362.

This species, based on *Myrsine buxifolia* Hance, has been referred by E. D. Merrill to *Distylium strictum* Hemsl. in the Hamamelidaceæ.(41, p. 251)

LIST OF CITED SPECIMENS [73]

Ahlburg.
26 Ardisia japonica.

Barchet, S. P.
469 Ardisia japonica.
472 Myrsine marginata.

Bartlett, H. H.
6078 Ardisia crenata.
6258 Ardisia virens.

Bock, C., and A. von Rosthorn.
25 Embelia pauciflora, TYPE.
233 Ardisia brevicaulis, TYPE.
2169 Myrsine africana.

Bodinier, E.
534 Ardisia elegans.
665 Ardisia elegans.
1636 (*Martin*) *Ardisia crispa* var. *Dielsii*, TYPE.
2049 Embelia pauciflora.
2081 (*Chaffanjon*) *Embelia pauciflora* var. *blinii*, TYPE.
2180 Myrsine semiserrata.
2253 Rapanea neriifolia.
2512 (*Laborde*) *Ardisia crenata.*
2513 (*Laborde*) *Maesa japonica.*
2564 (*Martin*) *Maesa tenera.*
2609 (*Seguin*) *Myrsine semiserrata.*

Boehmer, L. & Co.
84 Ardisia quinquegona.

Bullock, T. L.
200 Maesa japonica.

Buswell, C. *See* Canton Christian College.

Callery, M.
783 Maesa tenera, TYPE.

Canton Christian College (Lingnan University).
36 (*Levine & Groff*) *Maesa perlarius.*
45 (*Levine & Groff*) *Maesa salicifolia*, TYPE.
142 (*Levine & Groff*) *Maesa japonica.*
155 (*Levine & Groff*) *Ardisia punctata.*
190 (*Levine*) *Embelia laeta.*
270 (*Levine*) *Embelia laeta.*
284 (*Levine*) *Ardisia crenata.*
322 (*Levine*) *Ardisia quinquegona.*
330 (*Levine*) *Maesa perlarius.*
352 (*Levine*) *Embelia laeta.*
358 (*Levine*) *Maesa perlarius.*
430 (*Levine*) *Ardisia quinquegona.*
465 (*Levine*) *Maesa perlarius.*
690 (*Levine*) *Embelia ribes.*
698 (*Levine*) *Ardisia quinquegona.*
757 (*Levine*) *Ardisia quinquegona.*
1059 (*Levine*) *Maesa perlarius.*
1251 (*Levine*) *Maesa perlarius.*
1341 (*Levine*) *Ardisia Hanceana.*
1343 (*Levine*) *Ardisia primulifolia.*
1357 (*Levine*) *Embelia rudis.*

[73] Types of recognized species are designated, but those of synonyms are not marked. It not infrequently occurs that two or more species have been distributed under the same number to different herbaria. For the particular herbaria in which these specimens have been seen *see* the citations of specimens following the descriptions.

CANTON CHRISTIAN COLLEGE.—Ctd.

1358 (*Levine*) *Maesa japonica.*
1487 (*Levine*) *Ardisia Hanceana.*
1534 (*Levine*) *Ardisia Hanceana.*
1655 (*Levine*) *Maesa perlarius.*
1703 (*Levine*) *Ardisia quinquegona.*
2021 (*Levine*) *Embelia laeta.*
2028 (*Levine*) *Embelia longifolia.*
2031 (*Levine*) *Ardisia quinquegona.*
2077 *Ardisia quinquegona.*
2223 (*Groff*) *Maesa perlarius.*
2319 (*To Kang-peng*) *Embelia laeta.*
2341 *Ardisia mamillata.*
2657 (*To Kang-peng*) *Maesa* perlarius.
2665 (*To Kang-peng & C. C. Fuson*) *Ardisia pusilla.*
2792 (*To Kang-peng*) *Maesa japonica.*
3034 (*Levine*) *Maesa perlarius.*
3102 (*Levine*) *Ardisia quinquegona.*
3143 (*Levine*) *Ardisia quinquegona.*
3171 (*Levine*) *Ardisia punctata.*
3240 *Embelia ribes.*
3310 (*Levine*) *Maesa japonica.*
3378 (*Levine*) *Ardisia japonica.*
3611 *Embelia ribes.*
3997 (*K. K. Tsoong*) *Embelia scandens.*
4080 (*Groff*) *Maesa montana.*
6386 *Maesa salicifolia.*
6418 (*Buswell, Levine & To Kang-peng*) *Ardisia punctata.*
6527 *Ardisia punctata.*
6567 (*McClure*) *Rapanea neriifolia.*
6589 (*McClure*) *Ardisia chinensis.*
6608 *Embelia rudis.*

CANTON CHRISTIAN COLLEGE.—Ctd.

6695 (*McClure*) *Ardisia quinquegona.*
6765 *Embelia parviflora.*
6871 (*Levine & McClure*) *Rapanea neriifolia.*
6883 *Ardisia punctata.*
6924 (*Levine & McClure*) *Maesa perlarius.*
6964 (*Levine & McClure*) *Embelia oblongifolia.*
6985 (*Levine & McClure*) *Ardisia quinquegona.*
6994 (*Levine & McClure*) *Maesa japonica.*
7016 (*Levine & McClure*) *Ardisia Hanceana.*
7220 (*McClure*) *Ardisia primulifolia.*
7221 (*McClure*) *Ardisia mamillata.*
7247 (*McClure*) *Ardisia crenata.*
7897 (*McClure*) *Ardisia crenata.*
7930 (*McClure*) *Ardisia quinquegona.*
7948 (*McClure*) *Embelia ribes.*
8031 (*McClure*) *Maesa perlarius.*
8073 (*McClure*) *Ardisia elegans.*
8337 (*McClure*) *Ardisia elegans.*
8402 (*McClure*) *Embelia ribes.*
8458 (*McClure*) *Maesa perlarius.*
8482 (*McClure*) *Embelia oblongifolia.*
8504 *Ardisia elegans.*
8534 (*McClure*) *Ardisia elegans.*
8572 (*McClure*) *Maesa acuminatissima.*
8595 *Ardisia quinquegona* var. *hainanensis.*
8641 (*McClure*) *Ardisia primulifolia.*
8668 (*McClure*) *Ardisia Maclurei,* TYPE.
8671 (*McClure*) *Ardisia villosa* var. *ambovestita.*
8690 (*McClure*) *Ardisia mamillata.*

CANTON CHRISTIAN COLLEGE.—Ctd.

8739 (*Tsang Wai-tak*) *Ardisia primulifolia.*
8754 (*To Kang-peng*) *Embelia parviflora.*
8763 (*To Kang-peng*) *Embelia parviflora.*
8821 (*McClure*) *Embelia laeta.*
8882 (*McClure*) *Ardisia obtusa.*
8956 (*McClure*) *Ardisia obtusa.*
8960 (*McClure*) *Ardisia crassinervosa.*
8967 (*McClure*) *Ardisia quinquegona.*
8982 (*McClure*) *Embelia ribes.*
9088 (*Luk Mai Sin*) *Ardisia crenata.*
9216 (*McClure*) *Maesa perlarius.*
9333 (*McClure*) *Ardisia mamillata.*
9335 (*McClure*) *Ardisia primulifolia.*
9336 (*McClure*) *Ardisia villosa* var. *ambovestita.*
9338 (*McClure*) *Ardisia elegans.*
9416 (*McClure*) *Ardisia Maclurei.*
9442 (*McClure*) *Ardisia quinquegona* var. *hainanensis.*
9454 (*McClure*) *Maesa acuminatissima*, TYPE.
9468 (*McClure*) *Maesa consanguinea*, TYPE.
9473 (*McClure*) *Ardisia quinquegona* var. *oblonga.*
9540 (*McClure*) *Embelia oblongifolia.*
9541 (*McClure*) *Maesa consanguinea.*
9552 (*McClure*) *Ardisia Maclurei.*
9660 (*McClure*) *Embelia ribes.*
9934 (*Tsang Wai-tak*) *Embelia parviflora.*
10235 Maesa japonica.
11147 Embelia laeta.

CANTON CHRISTIAN COLLEGE.—Ctd.

11536 Maesa permollis.
11574 (*To Kang-peng*) *Maesa tenera.*
11825 (*Luk Tak*) *Ardisia quinquegona.*
12073 (*To Kang-peng & Tsang Wai-tak*) *Myrsine marginata.*
12081 (*To Kang-peng & Tsang Wai-tak*) *Maesa japonica.*
12089 (*To Kang-peng & Tsang Wai-tak*) *Maesa japonica.*
12092 (*To Kang-peng & Tsang Wai-tak*) *Rapanea neriifolia.*
12154 (*To Kang-peng & Tsang Wai-tak*) *Embelia longifolia.*
12158 (*To Kang-peng & Tsang Wai-tak*) *Ardisia pusilla.*
12182 (*To Kang-peng & Tsang Wai-tak*) *Ardisia punctata.*
12362 (*To Kang-peng & Tsang Wai-tak*) *Embelia rudis.*
12389 (*To Kang-peng & Tsang Wai-tak*) *Ardisia primulifolia.*
12543 (*To Kang-peng & Tsang Wai-tak*) *Ardisia quinquegona.*
12570 (*To Kang-peng & Tsang Wai-tak*) *Myrsine marginata.*
12601 (*To Kang-peng & Tsang Wai-tak*) *Ardisia mamillata.*
12657 (*To Kang-peng & Tsang Wai-tak*) *Ardisia gigantifolia.*
12664 (*To Kang-peng & Tsang Wai-tak*) *Ardisia chinensis.*
12683 (*To Kang-peng & Tsang Wai-tak*) *Embelia laeta.*

CANTON CHRISTIAN COLLEGE, ETC.—Continued.

12886 (*To Kang-peng & Tsang Wai-tak*) *Ardisia quinquegona.*
12889 (*To Kang-peng & Tsang Wai-tak*) *Ardisia mamillata.*
13185 (*McClure*) *Embelia laeta.*
13200 (*McClure*) *Ardisia punctata.*
13242 (*McClure*) *Maesa salicifolia.*
13312 (*McClure*) *Maesa perlarius.*
13352 (*McClure*) *Embelia ribes.*
13370 (*McClure*) *Ardisia mamillata.*
13447 (*McClure*) *Ardisia quinquegona.*
13730 (*McClure*) *Ardisia crenata.*
13747 (*McClure*) *Embelia longifolia.*
13806 (*McClure*) *Ardisia affinis.*
14036 (*Chan Kwai-shang*) *Embelia rudis.*
14047 (*McClure & Chan Kwai-shang*) *Maesa japonica.*
14058 *Ardisia punctata.*
14064 *Embelia rudis.*
14214 *Ardisia quinquegona.*
14246 (*Tsang Wai-Tak & Wong Kam-chow*) *Ardisia punctata.*
14251 *Ardisia elegans.*
14280 (*Tsang Wai-tak & Wong Kam-chow*) *Maesa perlarius.*
14345 (*Tsang Wai-tak & Wong Kam-chow*) *Ardisia mamillata.*
14357 (*Tsang Wai-tak & Wong Kam-chow*) *Ardisia chinensis.*
14414 (*Tsang Wai-tak & Wong Kam-chow*) *Embelia ribes.*
14695 (*Tsang Wai-tak & Wong Kam-chow*) *Embelia ribes.*

CANTON CHRISTIAN COLLEGE, ETC.—Continued.

14553 (*Tsang Wai-tak & Wong Kam-chow*) *Ardisia mamillata.*
14602 (*Tsang Wai-tak & Wong Kam-chow*) *Embelia parviflora.*
14613 (*Tsang Wai-tak & Wong Kam-chow*) *Ardisia Fordii.*
14680 (*Tsang Wai-tak & Wong Kam-chow*) *Ardisia primulifolia.*
14686 (*Tsang Wai-tak & Wong Kam-chow*) *Embelia parviflora.*
14880 (*Tsang Wai-tak & Wong Kam-chow*) *Embelia longifolia.*
14895 (*Tsang Wai-tak & Wong Kam-chow*) *Maesa japonica.*
14898 (*Tsang Wai-tak & Wong Kam-chow*) *Ardisia gigantifolia.*
15025 (*McClure*) *Maesa japonica.*
15041 *Embelia rudis.*
15044 *Ardisia punctata.*
15570 (*Tsang Wai-tak*) *Ardisia elegans.*
15675 (*Tsang Wai-tak*) *Maesa perlarius.*
15680 (*Tsang Wai-tak*) *Embelia ribes.*
15883 (*Tsang Wai-tak*) *Ardisia densilepidotula.*
15886 (*Tsang Wai-tak*) *Embelia oblongifolia.*
16098 (*Tsang Wai-tak*) *Ardisia quinquegona.*
16260 (*Tsang Wai-tak*) *Ardisia densilepidotula.*
16357 (*Tsang Wai-tak*) *Ardisia* sp.
16418 (*Tsang Wai-tak*) *Embelia oblongifolia.*
16504 (*Tsang Wai-tak*) *Ardisia quinquegona.*

CANTON CHRISTIAN COLLEGE, ETC.—Continued.

16508 (*Tsang Wai-tak*) *Embelia laeta.*
16509 (*Tsang Wai-tak*) *Embelia ribes.*
16526 (*Tsang Wai-tak*) *Ardisia crenata.*
16567 (*Tsang Wai-tak*) *Embelia rudis.*
16593 (*Tsang Wai-tak*) *Maesa perlarius.*
16654 (*Tsang Wai-tak*) *Aegiceras corniculata.*
16692 (*Tsang Wai-tak*) *Maesa perlarius.*
16862 (*Tsang Wai-tak*) *Embelia ribes.*
16865 (*Tsang Wai-tak*) *Embelia laeta.*
16903 (*Tsang Wai-tak*) *Ardisia quinquegona.*
16915 (*Tsang Wai-tak*) *Maesa perlarius.*
17344 (*Tsang Wai-tak*) *Ardisia* sp.
17423 (*Tsang Wai-tak*) *Ardisia crassinervosa,* TYPE.
17484 (*Tsang Wai-tak*) *Ardisia densilepidotula.*
17552 (*Tsang Wai-tak*) *Ardisia elegans.*
17574 (*Tsang, Tang & Fung*) *Maesa consanguinea.*
17673 (*Tsang Wai-tak*) *Ardisia gigantifolia.*
17901 Maesa consanguinea.
17971 Ardisia densilepidotula.
18098 Ardisia quinquegona var. *hainanensis,* TYPE.
18102 (*Tsang & Fung*) *Maesa acuminatissima.*
18103 (*Tsang & Fung*) *Rapanea affinis.*
18151 Ardisia retroflexa.
18431 (*Fung Hom*) *Ardisia crenata.*
18593 (*McClure*) *Maesa tenera.*
18705 (*Fung Hom*) *Ardisia mamillata.*

CANTON CHRISTIAN COLLEGE, ETC.—Continued.

18820 (*Fung Hom*) *Ardisia elegans.*
18913 (*Fung Hom*) *Ardisia quinquegona.*
18914 (*Fung Hom*) *Embelia ribes.*
18923 (*Fung Hom*) *Ardisia punctata.*
19103 (*McClure*) *Ardisia quinquegona.*
19261 (*Tsang Wai-tak*) *Embelia laeta.*
19320 (*Fung Hom*) *Embelia laeta.*
19471 (*Fung Hom*) *Ardisia quinquegona.*
19680 (*McClure*) *Ardisia villosa.*
19698 (*McClure*) *Ardisia Faberi.*
19778 (*Fung Hom*) *Rapanea neriifolia.*
19816 (*McClure*) *Ardisia elegans.*

CAVALERIE, J.
459 Maesa japonica.
[*751*] *Ardisia Faberi.*
840 Myrsine africana.
1327 Embelia pauciflora var. *Blinii.*
1744 Myrsine semiserrata.
1899 Ardisia Faberi.
3530 Ardisia tenera.

CHAFFANJON. *See* Bodinier, E.

CHAMPION, J. G.
82 Embelia laeta.
377 Embelia laeta.

CHANG, S. F.
791 Maesa hupehensis.
953 Ardisia crenata.

CHANG, S. L.
167 Embelia laeta.

CHANG, T. C. *See* Fukien Christian University, Herbarium of.

CHEN, LUETTA.
81 Rapanea neriifolia.
83 Maesa japonica.

CHEN, PING-EN. *See* Fukien Christian University.

CHEN, Y. *See* Nanking, Herbarium of the University of.

CHENG, CHEN-HSI. *See* Fukien Christian University, Herbarium of.

CHENG, W. C.
1952 Myrsine africana.
2940 Myrsine semiserrata.

CHEO, C. C. *See* Steward, A. N., and C. C. Cheo; *see also* Steward, A, N., C. Y, Chiao, and C. C. Cheo.

CHIAO, C. Y. *See* Nanking, Herbarium of the University of; *see also* Steward, A. N., C. Y. Chiao, and C. C. Cheo.

CHIEN, S. S.
1033 Rapanea neriifolia var. *yunnanensis.*
1082 Ardisia Hanceana.
5074 Myrsine semiserrata.
5557 Myrsine semiserrata.
5655 Myrsine semiserrata.

CHING, R. C.
1849 Rapanea neriifolia.
1857 Maesa japonica.
1950 Ardisia crenata.
1951 Ardisia Sieboldii.
2003 Ardisia chinensis.
2004 Maesa japonica.
2034 Embelia parviflora.
2039 Ardisia punctata.
2049 Rapanea neriifolia.
2050 Embelia rudis.
2069 Embelia rudis.
2275 Embelia rudis.
2481 Rapanea neriifolia.
2656 Ardisia crispa.
2945 Ardisia crenata.
3151 Maesa japonica.
3328 Ardisia crenata.
3727 Ardisia japonica.
5372 Embelia scandens.
5411 Maesa perlarius.
5414 Maesa perlarius.
5523 Ardisia quinquegona.
5555 Ardisia affinis.
5584 Embelia ribes.
5622 Ardisia elegans.

CHING, R. C.—Continued.
5634 Ardisia Faberi.
5664 Ardisia primulifolia.
5825 Maesa japonica.
6243 Embelia parviflora.
6259 Maesa japonica.
6397 Embelia scandens.
6506 Embelia oblongifolia.
6548a Maesa tenera.
6657 Rapanea kwangsiensis, TYPE.
6904 Maesa tenera.
6974 Ardisia crispa.
7027 Maesa perlarius.
7044 Embelia ribes.
7047 Maesa ramentacea.
7054 Ardisia depressa.
7274 Ardisia quinquegona.
7660 Embelia oblongifolia.
7870 Maesa ramentacea.
7888 Ardisia elegans.
7910 Ardisia quinquegona.
7962 Rapanea neriifolia.
8000 Ardisia filiformis, TYPE.
8006 Ardisia villosa.
8133 Rapanea neriifolia.
8185 Ardisia mamillata.
8217 Rapanea neriifolia.
8244 Rapanea neriifolia var. *yunnanensis.*
8267 Rapanea neriifolia.
8307 Ardisia villosa.
8344 Embelia laeta.
8347 Maesa perlarius.
8369 Embelia laeta.
8370 Embelia laeta.
8384 Ardisia gigantifolia.
8385 Maesa japonica.
8428 Rapanea neriifolia.
8443 Embelia ribes.
See also Nanking, Herbarium of the University of.

CHOW, HO-CH'ANG. *See* Wu-Han University, Herbarium of the National.

CHU, VONG-MAY.
36 Ardisia obtusa.
50 Maesa perlarius.
106 Ardisia obtusa.
159 Embelia laeta.

CHUN, L. H.
91215 Ardisia crenata.
91229 Ardisia quinquegona.
91331 Ardisia mamillata.

CHUN, N. K.
40042 Embelia laeta.
40136 Embelia oblongifolia.
40138 Embelia oblongifolia.
40154 Ardisia primulifolia.
40442 Embelia laeta.
40446 Rapanea neriifolia.
See also How, F. C., and N. K. Chun.

CHUN, N. K., and C. L. TSO.
43318 Aegiceras corniculata.
43402a Maesa perlarius.
43404 Ardisia elegans.
43493 Embelia oblongifolia.
43674 Ardisia villosa var. *oblanceolata.*
43689 Rapanea neriifolia.
43713 Ardisia densilepidotula.
43740 Maesa perlarius.
43786 Ardisia villosa var. *oblanceolata.*
43942 Maesa membranacea.
43965 Ardisia densilepidotula.
44037 Ardisia elegans.
44058 Rapanea affinis.
44174 Ardisia mamillata.
44175 Ardisia primulifolia.
44210 Ardisia villosa var. *ambovestita.*
44239 Rapanea neriifolia.
44320 Rapanea neriifolia.
44363 Rapanea neriifolia.
44375 Ardisia densilepidotula.
44381 Embelia ribes.
44397 Embelia oblongifolia.
44400 Ardisia villosoides.
44414 Embelia laeta.
44541 Embelia scandens.
44551 Ardisia porifera.
44592 Maesa Balansae.
44663 Ardisia humilis.
44742 Ardisia nervosa.
44758 Embelia ribes.

CHUN, N. K., and C. L. TSO.—Ctd.
44789 Embelia scandens.
44793 Rapanea linearis.

CHUN, W. Y.[74]
3084 Ardisia quinquegona.
3092 Ardisia punctata.
3093 Maesa perlarius.
3135 Ardisia punctata.
4815 Ardisia quinquegona.
4821 Rapanea neriifolia.
4848 Aegiceras corniculata.
4860 Maesa perlarius.
5010 Rapanea neriifolia.
5038 Ardisia punctata.
5117 Ardisia quinquegona.
5170 Rapanea neriifolia.
5172 Embelia laeta.
5199 Maesa japonica.
5215 Maesa japonica.
5232 Maesa japonica.
5266 Maesa perlarius.
5505 Ardisia crenata.
5569 Ardisia crenata.
5579 Embelia rudis.
5589 Ardisia punctata.
5591 Ardisia quinquegona.
5593 Ardisia mamillata.
5598 Ardisia punctata.
5606 Maesa japonica.
5621 Maesa japonica.
5628 Embelia rudis.
5630 Maesa japonica.
5684 Maesa japonica.
5750 Ardisia japonica.
5766 Maesa japonica.
5790 Maesa tenera.
5796 Maesa japonica.
5869 Maesa japonica.
5913 Ardisia Hanceana.
5916 Myrsine marginata.
5934 Ardisia Hanceana.
5939 Ardisia mamillata.
5946 Embella laeta.
6002 Ardisia elegans.
6071 Aegiceras corniculata.
6160 Maesa perlarius.
6239 Ardisia quinquegona.

[74] Chun's 1919–1920 and 1922 collections from Hainan were numbered in the Herb. Univ. Nanking series and are cited under that institution.

CHUN, W. Y.—Continued.
6274 Ardisia triflora.
6305 Maesa tenera.
6313 Rapanea neriifolia.
6378 Ardisia quinquegona.
6384 Embelia ribes.
6440 Embelia longifolia.
6508 Rapanea neriifolia.
6596 Maesa perlarius.
6818 Embelia ribes.
6862 Embelia ribes.
6988 Rapanea neriifolia.
7344 Ardisia quinquegona.
7516 Rapanea neriifolia.
7517 Maesa tenera.
See also Nanking, Herbarium of the University of.

CHUN, Y. F.
30434 Embelia oblongifolia.

CHUNG, H. H.
856 Maesa perlarius.
861 Ardisia crenata.
874 Ardisia quinquegona.
877 Maesa perlarius.
886 Ardisia quinquegona.
906 Maesa tenera.
909 Ardisia pusilla.
910 Ardisia quinquegona.
921 Ardisia Sieboldii.
930 Maesa japonica.
939 Ardisia pusilla.
973 Embelia ribes.
980 Ardisia crenata.
1056 Ardisia crenata.
1060 Maesa perlarius.
1133 Maesa perlarius.
1163 Ardisia crenata.
1184 Embelia laeta.
1215 Maesa perlarius.
1224 Ardisia quinquegona.
1279 Maesa japonica.
1282 Ardisia quinquegona.
1290 Ardisia punctata.
1685 Embelia laeta.
1719 Ardisia crenata.
2096 Ardisia crenata.
2246 Ardisia punctata (in Arn. Arb.).
2246 Ardisia crenata (in U. Calif.).
2266 Maesa japonica.

CHUNG, H. H.—Continued.
2267 Ardisia quinquegona.
2278 Rapanea neriifolia.
2312 Ardisia pusilla.
2460 Ardisia quinquegona.
2461 Ardisia crenata.
2644 Maesa tenera.
2659 Ardisia punctata.
2715 Ardisia quinquegona.
2732 Ardisia crenata.
2750 Ardisia punctata.
2753 Ardisia quinquegona.
2825 Ardisia primulifolia.
2958 Ardisia brevicaulis.
2975 Ardisia quinquegona.
2981 Ardisia chinensis.
3036 Embelia longifolia.
3094 Embelia rudis.
3140 Maesa tenera.
3141 Maesa tenera.
3185 Maesa tenera.
3189 Ardisia quinquegona.
3211 Rapanea neriifolia.
3269 Ardisia quinquegona.
3316 Embelia parviflora.
3333 Ardisia crenata.
3359 Embelia rudis.
3367 Maesa japonica.
3497 Rapanea neriifolia.
3698 Ardisia quinquegona.
3699 Rapanea neriifolia.
3705 Ardisia punctata.
4543 Embelia laeta.
4551 Rapanea linearis.
4560 Embelia laeta.
4562 Embelia laeta.
4570 Rapanea linearis.
4576 Embelia laeta.
4613 Embelia laeta.
4750 Embelia laeta.
4773 Embelia laeta.
4778 Embelia laeta.
4814 Embelia laeta.
4848 Embelia laeta.
5451 Embelia laeta.
5899 Embelia laeta.
6017 Embelia laeta.
6184 Embelia laeta.
6240 Embelia laeta.
6422 Embelia rudis.
6428 Ardisia crenata.

CHUNG, H. H.—Continued.
6649 Maesa japonica.
6656 Ardisia japonica.
6734 Ardisia quinquegona.
6792 Rapanea neriifolia.
6872 Ardisia quinquegona.
6900 Maesa japonica.
7005 Maesa japonica.
7387 Maesa tenera.
7595 Ardisia pusilla.
7725 Maesa tenera.
7739 Ardisia quinquegona.
7767 Rapanea neriifolia.
8039 Maesa tenera.
8087 Ardisia punctata.
8091 Ardisia quinquegona.
8092 Rapanea neriifolia.
8419 Maesa tenera.
8467 Rapanea neriifolia.
8470 Ardisia quinquegona.
8562 Maesa japonica.
See also Wu-Han University, Herbarium of the National.

CHUNG, Z. S.
81523 Maesa japonica.
81675 Ardisia crenata.
83313 Ardisia crenata.
83337 Ardisia crispa var. *Dielsii.*
83491 Ardisia bicolor.
83660 Ardisia crenata.

DORSETT, P. H., and W. Y. MORSE.
796 Ardisia japonica.

DUCLOUX, F.
101 Myrsine africana.
166 Embelia procumbens.
476 Myrsine africana.

DUNN, S. T. *See* Hongkong Botanical Garden, Herbarium of.

ESQUIROL, J.
726 Embelia oblongifolia.
743 Embelia oblongifolia.
1161 Ardisia Mouretii.
1572 Maesa japonica.
2625 Maesa japonica.

FABER, E.
96 Myrsine marginata, TYPE (in part).
98 Ardisia Faberi.

FABER, E.—Continued.
120? Rapanea Faberi.
132 Rapanea Faberi, TYPE.
172 Ardisia crispa.
649 Ardisia japonica.
650 Ardisia japonica.
657 Myrsine marginata, TYPE (in part).
664 Ardisia caudata, TYPE.
665 Maesa hupehensis.
701 [791?] Ardisia mamillata.
795 Ardisia Faberi.
See also Hongkong Botanical Garden, Herbarium of.

FAN, C. S., and Y. Y. LI.
36 Ardisia japonica.
62 Ardisia brevicaulis.
67 Ardisia japonica.
100 Maesa japonica.
137 Ardisia crenata.
216 Ardisia crispa.
629 Ardisia crispa.
630 Ardisia japonica.
679 Ardisia crenata.

FAN, C. S., and class.
42 Ardisia crenata.
74 Myrsine semiserrata.
97 Myrsine africana.
129 Myrsine semiserrata.

FANG, W. P.
50 Myrsine africana.
55 Maesa montana.
62 Maesa montana.
122 Myrsine africana.
218 Myrsine semiserrata.
372 Ardisia crenata.
1246 Ardisia Faberi.
1952 Myrsine africana.
2036 Myrsine semiserrata.
2045 Ardisia japonica.
2056 Maesa hupehensis.
2090 Ardisia japonica.
2114 Maesa hupehensis.
2151 Ardisia japonica.
2340 Maesa montana.
2519 Maesa hupehensis.
2530 Maesa hupehensis.
2588 Maesa hupehensis.
3467 Ardisia japonica.
3780 Ardisia crenata.

FANG, W. P.—Continued.
3839 Myrsine africana.
3901 Maesa hupehensis.
3902 Ardisia crispa.
4987 Myrsine africana.
5065 Myrsine africana.
5565 Myrsine africana.
5613 Embelia rudis.
5627 Maesa japonica.
5629 Maesa japonica.
5651 Myrsine africana.
5655 Embelia rudis.
5754 Ardisia Faberi.
5825 Maesa japonica.
5829 Myrsine semiserrata.
6366 Maesa montana.
6935 Maesa montana.
7010 Maesa montana.
9128 Myrsine africana.
9488 Myrsine africana.
9792 Myrsine africana.
9820 Myrsine africana.
9850 Myrsine africana
9883 Myrsine africana.

FAURIE, U.
115 Ardisia japonica.
253 Maesa tenera.
259 Maesa tenera.
306 Ardisia quinquegona.
307 Ardisia Sieboldii.
328 Maesa tenera.
336 Ardisia crenata.
342 Ardisia cornudentata.
738 Ardisia crenata.
1033 Ardisia Sieboldii.
1034 Ardisia quinquegona.
1486 Ardisia virens.
1637 Rapanea neriifolia.
1638 Rapanea neriifolia.
1896 Ardisia crenata.
1897 Ardisia pusilla.
1898 Ardisia japonica.
2554 Ardisia pusilla.
3496 Ardisia japonica.
3804 Ardisia Sieboldii.
3807 Rapanea neriifolia.
4005 Ardisia Sieboldii.
4006 Ardisia Sieboldii.
4158 Ardisia japonica.
4802 Rapanea neriifolia.
4829 Maesa japonica.
5530 Maesa japonica.

FENZEL, G.
114 Rapanea neriifolia.
129 Embelia longifolia.
168 Rapanea affinis.

FONG (Distributed by H. H. Hu).
63 Myrsine marginata.
84 Rapanea neriifolia.
86 Myrsine marginata.
94 Myrsine marginata.
156 Ardisia punctata.
233 Ardisia crenata.
254 Ardisia crenata.

FORD, C.
50 Ardisia Sieboldii.
51 Ardisia chinensis.
59 Ardisia mamillata.
90 Embelia oblongifolia, TYPE.
106 Ardisia affinis, TYPE.
107 Ardisia triflora, TYPE.
110 Ardisia Fordii, TYPE.

FORMOSA, HERBARIUM OF THE GOVERNMENT OF.
W172 (*Kanehira & Sasaki*) *Ardisia crenata.*
W173 (*Matuda*) *Ardisia quinquegona.*
W174 (*Matuda*) *Ardisia Sieboldii.*
222 (*Matuda*) *Ardisia chinensis.*
M223 (*Kanehira & Sasaki*) *Ardisia stenosepala.*
224 (*Sasaki*) *Ardisia quinquegona.*
225 (*Matuda*) *Ardisia Sieboldii.*
W285 (*Matuda*) *Maesa tenera.*
W303 (*Simada*) *Rapanea neriifolia.*
21151 (*Kanehira*) *Ardisia cornudentata.*
21186 (*Kanehira*) *Myrsine marginata.*
21207 (*Hayashi*) *Ardisia quinquegona.*
21231 (*Hayashi*) *Maesa tenera.*
21243 (*Hayashi*) *Ardisia Sieboldii.*

FORMOSA, ETC.—Continued.

21776 (*Kanehira and Sasaki*) *Embelia lenticellata.*
21868 (*Kanehira*) *Maesa tenera.*
21947 (*Katumada*) *Maesa tenera.*
22090 (*Konishi*) *Ardisia elegans.*

FORREST, G.

418 Myrsine africana.
544 Myrsine semiserrata.
573 Myrsine semiserrata.
806 Ardisia crenata.
821 Embelia vestida.
945 Rapanea neriifolia var. *yunnanensis.*
1065 Embelia floribunda.
4192 Myrsine africana.
4706 Myrsine semiserrata.
7357 Embelia vestita.
7511 Embelia ribes.
7523 Embelia floribunda.
7527 Embelia vestita.
7534 Rapanea neriifolia var. *yunnanensis.*
7572 Myrsine semiserrata.
7587 Myrsine semiserrata.
7624 Rapanea neriifolia var. *yunnanensis.*
7795 Maesa argentea.
7816 Embelia floribunda.
7918 Ardisia crenata.
7934 Ardisia shweliensis, TYPE.
7960 Ardisia virens.
7966 Embelia vestita.
8010 Embelia ribes.
8060 Ardisia crenata.
8137 Embelia ribes.
8285 Maesa montana.
8294 Maesa argentea.
8492 Myrsine semiserrata.
8513 Myrsine semiserrata.
8605 Ardisia crenata.
8614 Myrsine semiserrata.
8716 Ardisia virens.
8726 Maesa montana.
8781 Embelia vestita.
8903 Embelia subcoriacea.

FORREST, G.—Continued.

9235 Rapanea neriifolia var. *yunnanensis.*
9256 Embelia vestita.
9311 Embelia vestita.
9347 Myrsine semiserrata.
9348 Myrsine semiserrata.
9352 Ardisia crenata.
9355 Embelia vestita.
9375 Embelia ribes.
9385 Maesa montana.
9390 Maesa montana.
9406 Embelia floribunda.
9425 Myrsine semiserrata.
9429 Ardisia virens.
9469 Ardisia crenata.
9491 Maesa montana.
9495 Rapanea neriifolia var. *yunnanensis.*
9523 Maesa montana.
9565 Myrsine semiserrata.
9570 Embelia floribunda.
9604 Maesa montana.
9631 Myrsine semiserrata.
9664 Embelia floribunda.
9667 Ardisia virens.
9673 Myrsine semiserrata.
9791 Myrsine semiserrata.
9814 Maesa montana.
9820 Embelia sessiliflora.
10077 Myrsine africana.
10948 Myrsine africana.
11036 Rapanea neriifolia var. *yunnanensis.*
11290 Myrsine semiserrata.
11432 Myrsine africana.
11442 Rapanea neriifolia var. *yunnanensis.*
11456 Myrsine semiserrata.
11813 Rapanea neriifolia var. *yunnanensis.*
12090 Embelia vestita.
12102 Embelia vestita.
12126 Embelia floribunda.
12143 Maesa permollis var. *effusa*, TYPE.
12256 Maesa sp. (abnormal).
12696 Rapanea neriifolia var. *yunnanensis.*
13495 Myrsine semiserrata.

FORREST, G.—Continued.
13603 *Maesa* sp. (abnormal).
13637 *Maesa permollis* var. *effusa.*
13673 *Myrsine semiserrata.*
13687 *Ardisia crenata.*
15301 *Myrsine semiserrata.*
15694 *Myrsine semiserrata.*
15950 *Embelia vestita.*
15974 *Maesa argentea.*
16014 *Myrsine semiserrata.*
16099 *Embelia Gamblei.*
16100 *Rapanea neriifolia* var. *yunnanensis.*
16151 *Maesa montana.*
16164 *Embelia floribunda.*
16181 *Myrsine semiserrata.*
16189 *Myrsine semiserrata.*
16564 *Maesa rugosa.*
17072 *Rapanea neriifolia* var. *yunnanensis.*
17180 *Myrsine semiserrata.*
17182 *Myrsine semiserrata.*
17223 *Embelia vestita.*
17486 *Ardisia crenata.*
17632 *Embelia Gamblei.*
17702 *Embelia ribes.*
17846 *Embelia floribunda.*
17875 *Embelia floribunda.*
17979 *Ardisia crenata.*
18431 *Maesa montana.*
18445 *Ardisia virens.*
18537 *Embelia Gamblei.*
18588 *Embelia subcoriacea.*
18839 *Embelia subcoriacea.*
19243 *Ardisia crenata.*
19271 *Embelia vestita.*
19326 *Maesa rugosa.*
19340 *Myrsine semiserrata.*
19909 *Ardisia crenata.*
20955 *Myrsine semiserrata.*
22243 *Myrsine semiserrata.*
23453 *Myrsine semiserrata.*
24052 *Myrsine semiserrata.*
24213 *Embelia Gamblei.*
24423 *Embelia floribunda.*
24460 *Embelia subcoriacea.*
24462 *Embelia ribes.*
24469 *Embelia Gamblei.*
24637 *Ardisia crenata.*
24763 *Rapanea Faberi.*

FORREST, G.—Continued.
25242 *Myrsine semiserrata.*
25333 *Embelia floribunda.*
25660 *Embelia Gamblei.*
25839 *Embelia Gamblei.*
26064 *Embelia subcoriacea.*
26094 *Embelia floribunda.*
26160 *Embelia floribunda.*
26188 *Maesa argentea.*
26189 *Myrsine semiserrata.*
26192 *Myrsine semiserrata.*
26193 *Myrsine semiserrata.*
26214 *Maesa montana.*
26219 *Myrsine semiserrata.*
26228 *Myrsine semiserrata.*
26267 *Myrsine semiserrata.*
26284 *Myrsine semiserrata.*
26654 *Embelia Gamblei.*
27980 *Ardisia crenata.*
27982 *Embelia vestita.*
27988 *Maesa montana.*
28048 *Rapanea neriifolia* var. *yunnanensis.*
28049 *Embelia vestita.*
28995 *Embelia vestita.*
29367 *Embelia floribunda.*
29386 *Ardisia solanacea.*
29394 *Maesa permollis.*
29409 *Ardisia crenata.*
29600 *Embelia Gamblei.*
29794 *Embelia floribunda.*

FORTUNE.
151 *Maesa perlarius.*

FUKIEN CHRISTIAN UNIVERSITY.
42 (*T. C. Chang & Metcalf*) *Ardisia Sieboldii.*
213 (*T. C. Chang & Metcalf*) *Ardisia crenata.*
523 (*T. C. Chang & Metcalf*) *Ardisia punctata.*
648 (*T. C. Chang & Metcalf*) *Ardisia crenata.*
811 (*T. C. Chang & Metcalf*) *Maesa tenera.*
830 (*T. C. Chang & Metcalf*) *Maesa perlarius.*
1038 (*Cheng Chen-hsi*) *Ardisia crenata.*
1105 (*Cheng Chen-hsi*) *Ardisia crenata.*

FUKIEN, ETC.—Continued.
1499 (*Cheng Chen-hsi*) *Ardisia punctata.*
1521 (*Cheng Chen-hsi*) *Rapanea neriifolia.*
1593 (*Cheng Chen-hsi*) *Maesa japonica.*
1669 (*Cheng Chen-hsi*) *Ardisia crenata.*
2200 (*Chen Ping-en*) *Ardisia Sieboldii.*
2395 (*Chen Ping-en*) *Rapanea neriifolia.*
2544 (*Chen Ping-en*) *Embelia rudis.*
2591 (*Chen Ping-en*) *Embelia rudis.*
2967a (*Liang*) *Ardisia crenata.*
3025 (*Cheng Chen-hsi*) *Ardisia crenata.*
3308 (*Cheng Chen-hsi*) *Ardisia crenata.*
3490 (*Metcalf*) *Ardisia crenata.*
5745 Ardisia crenata.
5756 Maesa japonica.
5778 Ardisia crenata.
5798 Ardisia quinquegona.
5808 Maesa japonica.
6783 (*Tang Siu-ging*) *Maesa japonica.*
6788 Ardisia crenata.
7002 Maesa japonica.
7011 (*Tsang Siu-ging*) *Ardisia quinquegona.*
7026 (*Tang Siu-ging*) *Maesa perlarius.*
7051 (*Tang Siu-ging*) *Ardisia quinquegona.*
7259 (*Tang Siu-ging*) *Ardisia quinquegona.*
7410 (*Metcalf*) *Rapanea neriifolia.*
9684 Maesa japonica.
11358 (*Lin Yu-tai*) *Ardisia Sieboldii.*
12090 (*Lin Yu-tai*) *Ardisia quinquegona.*
12139 Ardisia punctata.

FUKIEN, ETC.—Continued.
13245 (*Tang Siu-ging*) *Rapanea neriifolia.*
13603 (*Tang Siu-ging*) *Rapanea neriifolia.*
15022 Maesa tenera.
15382 Maesa tenera.

FUNG, HOM.
20023 Ardisia humilis.
20144 Ardisia quinquegona var. *hainanensis.*
20165 Embelia ribes.
20203 Ardisia virens.
20315 Ardisia humilis.
20316 Ardisia obtusa.
20333 Ardisia obtusa.
20335 Ardisia densilepidotula.
See also Canton Christian College.

FUSON, C. G. *See* Canton Christian College.

GIBBS, L. *See* Hongkong Botanical Garden, Herbarium of the.

GRANGER, MRS. WALTER.
38 Myrsine africana.
54 Myrsine africana.

GRESSITT, J. LINSLEY.
7 Maesa tenera.
71 Maesa tenera.
73 Ardisia virens.
203 Maesa tenera.
209 Ardisia quinquegona.
226 Embelia rudis.
239 Ardisia Sieboldii.
254 Ardisia virens.
257 Ardisia Sieboldii.
332 Ardisia virens.
334 Ardisia Sieboldii.
357 Myrsine marginata.
412 Maesa japonica.
491 Ardisia cornudentata.
508 Ardisia cornudentata.
533 Ardisia quinquegona.
546 Ardisia quinquegona.
610 Ardisia quinquegona.
866 Ardisia elegans.
880 Ardisia quinquegona.
897 Rapanea linearis.

GRESSITT, J., LINSLEY.—Continued.
931 Ardisia crassinervosa.
962 Ardisia quinquegona.
989 Rapanea linearis.
991 Embelia ribes.
1009 Ardisia elegans.
1099 Maesa laxiflora.
1331 Ardisia quinquegona.
1386 Maesa japonica.
1504 Ardisia crenata.
1513 Ardisia crenata.
1515 Ardisia crispa.
1538 Ardisia affinis.
1585 Embelia rudis.
1594 Rapanea neriifolia.
1611 Ardisia crenata.
1616 Maesa japonica.
1624 Embelia longifolia.
1685 Ardisia mamillata.
1689 Myrsine marginata.
1702 Ardisia chinensis.
1742 Rapanea neriifolia.
1756 Ardisia quinquegona var. *oblonga?*

GROFF, G. W. *See* Canton Christian College.

HANCE, H. F.
130 Rapanea neriifolia.
479 Embelia ribes.
831 Embelia laeta.
1253 Ardisia primulifolia.

HANCOCK, W.
133 Maesa montana.
460 Maesa indica.
478 Maesa montana.

HANDEL-MAZZETTI, H.
32 Myrsine semiserrata.
157 Embelia rudis, TYPE.
203 Maesa japonica.
249 Ardisia punctata.
287 Ardisia brevicaulis.
398 Ardisia crenata.
464 Maesa japonica.
479 Ardisia crenata.
1119 Rapanea neriifolia var. *yunnanensis.*
1185 Maesa argentea.
5321 Maesa montana.
5821 Maesa indica?
6294 Maesa argentea.

HANDEL-MAZZETTI, H.—Continued.
6300 Rapanea neriifolia var. *yunnanensis.*
8601 Rapanea neriifolia var. *yunnanensis.*
8997 Ardisia macrocarpa?
9031 Maesa rugosa.
9123 Ardisia macrocarpa?
9801 Ardisia macrocarpa?
10274 Rapanea neriifolia.
10376 Rapanea kwangsiensis?
10517 Ardisia japonica.
10645 Maesa japonica.
10716 Ardisia crispa var. *Dielsii.*
10718 Ardisia brevicaulis.
10848 Embelia parviflora.
11399 Ardisia japonica.
11420 Maesa japonica.
11421 Ardisia crenata.
11470 Ardisia pusilla.
11476 Ardisia brevicaulis.
11477 Ardisia japonica.
12128 Ardisia crispa.
12739 Maesa japonica.
13019 Rapanea neriifolia var. *yunnanensis.*
13064 Myrsine africana.

HARLAND.
1025 Embelia longifolia, TYPE?

HAYASHI, T. *See* Formosa, Herbarium of the government of.

HAYATA, B.
649 Myrsine marginata.

HENRY, A.
54 Ardisia cornudentata, TYPE.
64 Maesa tenera.
85 Ardisia virens.
126 Maesa japonica.
126A Maesa japonica.
203 Maesa tenera.
414 Ardisia Sieboldii.
461 Maesa tenera (in Arn. Arb.).
461 Maesa japonica (in U. S. Nat. Herb.).
555 Ardisia virens.
651 Ardisia Sieboldii.
667 Ardisia Sieboldii.

HENRY, A.—Continued.

909 Ardisia virens.
975 Ardisia cornudentata.
1074 Ardisia cornudentata.
1074A Ardisia cornudentata.
1114A Myrsine africana.
1250 Rapanea neriifolia.
1881 Ardisia Sieboldii.
1881A Ardisia Sieboldii.
2275 Ardisia japonica.
3265 Ardisia crenata.
3277 Myrsine semiserrata.
3277B Myrsine semiserrata.
3277C Myrsine semiserrata.
3277D Myrsine semiserrata.
3304 Ardisia Faberi, TYPE.
3455 Ardisia crispa.
3457 Maesa japonica.
3804 Maesa japonica.
3808 Myrsine africana.
3972 Ardisia crispa.
4314 Ardisia crispa.
4563 Maesa japonica.
6237 Ardisia Faberi.
6365 Ardisia crispa.
7124 Maesa hupehensis.
7683 Ardisia japonica.
7685 Myrsine semiserrata.
7747 Ardisia crispa.
7757 Maesa japonica.
7920 Maesa hupehensis.
7990 Ardisia obtusa, TYPE.
8103 Ardisia villosa.
8152 Maesa perlarius.
8388 Ardisia villosa.
8417 [*847?*] *Ardisia crenata.*
8669 Maesa perlarius.
9173A Rapanea Faberi.
9173B Myrsine semiserrata.
9173C Myrsine semiserrata.
9173D Myrsine semiserrata.
9173E Myrsine semiserrata.
9226 Ardisia virens.
9226A Ardisia virens.
9226B Ardisia virens.
9226C Ardisia virens.
9380 Embelia vestita.
9380A Embelia oblongifolia.
9380B Embelia oblongifolia.
9380C Embelia vestita.
9380D Embelia oblongifolia.

HENRY, A.—Continued.

9384 Embelia parviflora.
9464 ? Maesa montana.
9464A Maesa montana.
9464B Maesa montana.
9464C Maesa montana.
9536 Ardisia solanacea.
9536A Ardisia solanacea.
9649 Maesa permollis.
9649A Maesa permollis.
9649B Maesa permollis.
9653 Ardisia crispa var. *amplifolia*, TYPE.
9653A Ardisia tenera (at Arn. Arb.)
9653A Ardisia crispa var. *amplifolia* (at N. Y. Bot. Gard.).
9653B Ardisia crispa var. *amplifolia.*
9791 Ardisia crenata.
9791A Ardisia crenata.
9793 Embelia procumbens.
9852 Ardisia caudata.
9885 Embelia subcoriacea.
9972 Myrsine africana.
9972A Myrsine africana.
9972B Myrsine africana.
10060 Embelia polypodioides.
10060A Embelia polypodioides, TYPE.
10060B Embelia polypodioides.
10153 Maesa montana.
10260 Embelia vestita.
10416 Maesa indica?
10416A Maesa indica?
10632 Maesa ramentacea.
10690 Embelia ribes.
10779 Ardisia conspersa, TYPE.
10832 Ardisia maculosa.
10913 Embelia Henryi, TYPE.
11028 Ardisia depressa.
11032 Ardisia salicifolia, TYPE.
11160 Embelia procumbens, TYPE.
11327 Embelia vestita.
11327A Embelia vestita.
11327C Embelia vestita.
11328 Ardisia crenata.
11338 Ardisia Faberi? (in part).

HENRY, A.—Continued.
11348 Maesa japonica.
11356 Ardisia caudata.
11394 Embelia oblongifolia.
11394A Embelia oblongifolia.
11400 Ardisia virens.
11444 Ardisia replicata, TYPE.
11453 Maesa sp. (diseased).
11463 Ardisia depressa.
11570 Rapanea neriifolia var. *yunnanensis,* TYPE (in part).
11570A Rapanea neriifolia var. *yunnanensis.*
11570B Rapanea neriifolia var. *yunnanensis,* TYPE (in part).
11570C Rapanea neriifolia var. *yunnanensis,* TYPE (in part).
11624 Ardisia virens.
11624A Ardisia virens.
11624B Ardisia virens.
11624C Ardisia virens.
11624D Ardisia virens.
11625 Maesa montana.
11625A Maesa montana.
11629 Ardisia arborescens.
11680 Embelia sessiliflora.
11680A Embelia sessiliflora.
11704 Maesa macilenta.
11704A Maesa macilenta, TYPE.
11707 Maesa permollis.
11707A Maesa permollis.
11707B Maesa permollis.
11707C Maesa permollis.
11707D Maesa permollis.
11724 Ardisia corymbifera. TYPE.
11724A Ardisia corymbifera.
11724C Ardisia corymbifera.
11754 Ardisia maculosa.
11994 Ardisia yunnanensis.
12000 Ardisia corymbifera.
12000A Ardisia corymbifera.
12021 Ardisia scalarinervis, TYPE.
12021A Ardisia scalarinervis.
12021B Ardisia scalarinervis.
12088 Ardisia maculosa.
12088A Ardisia maculosa.

HENRY, A.—Continued.
12088B Ardisia maculosa.
12088D Ardisia maculosa.
12088E Ardisia maculosa.
12094 Ardisia tenera, TYPE.
12123 Ardisia arborescens.
12123A Ardisia arborescens.
12175 Ardisia villosa.
12175A Ardisia villosa.
12175B Ardisia villosa.
12693 Ardisia salicifolia.
12776 Embelia oblongifolia.
12776A Embelia oblongifolia.
12776B Embelia oblongifolia.
12826A Embelia parviflora.
12826A Embelia parviflora.
12826B Embelia parviflora.
12826C Embelia parviflora.
13037 Myrsine semiserrata.
13095 Ardisia yunnanensis, TYPE.
13226 Ardisia stellata, TYPE.
13270 Myrsine semiserrata.
13279 Ardisia crispa var. *Dielsii.*
13311 Myrsine semiserrata.
13407 Ardisia crispa var. *Dielsii.*
13578 Ardisia maculosa.
13655 Maesa ramentacea.
13671 Ardisia caudata.
13773 Ardisia solanacea.

HENRY, B. C.
2 Ardisia humilis.

HO, H. T.
60005 Ardisia Fordii.
60026 Maesa salicifolia.
60028 Embelia ribes.
60029 Rapanea neriifolia.
60042 Ardisia punctata.
60142 Maesa perlarius.

HONGKONG BOTANICAL GARDEN, HERBARIUM OF.
641 Embelia parviflora.
1085 Ardisia punctata.
1755 Ardisia elegans.
2174 Ardisia humilis.
2246 Ardisia crassinervosa.
2890 (Dunn) Maesa japonica.
2891 (Dunn) Rapanea neriifolia.

HONGKONG, ETC.—Continued.
2892 (*Dunn*) *Embelia longifolia.*
2893? (*Dunn*) *Embelia rudis.*
2895 (*Dunn*) *Ardisia pusilla.*
2896 (*Dunn*) *Ardisia quinquegona.*
2897 (*Dunn*) *Ardisia mamillata.*
4517 *Ardisia elegans.*
6680 (*Katsumata*) *Ardisia obtusa.*
7355 (*L. Gibbs*) *Aegiceras corniculata* (in part).
7487 (*L. Gibbs*) *Ardisia quinquegona.*
8026 *Ardisia primulifolia.*
8027 *Ardisia elegans.*
8161 *Ardisia quinquegona.*
9039 (*Faber*) *Maesa perlarius.*
10881A (*Tutcher*) *Ardisia Hanceana.*
10882A (*Tutcher*) *Maesa perlarius.*
10948 *Ardisia villosa.*
11171 *Ardisia villosa.*

HOW, F. C.
70530 *Ardisia obtusa.*
70574 *Ardisia obtusa.*
70887 *Aegiceras corniculata.*
71019 *Ardisia densilepidotula.*
71089 *Ardisia quinquegona* var. *oblonga,* TYPE.
71386 *Ardisia humilis.*
71387 *Maesa perlarius.*
71421 *Maesa perlarius.*
71425 *Ardisia obtusa.*
71442 *Rapanea linearis.*
71510 *Maesa perlarius.*
71640 *Embelia ribes.*
71784 *Ardisia elegans.*
71803 *Ardisia humilis.*
71949 *Ardisia quinquegona.*
72005 *Maesa perlarius.*
72010 *Maesa laxiflora.*
72037 *Ardisia Silvestris.*
72049 *Ardisia Maclurei.*
72402 *Ardisia quinquegona.*
72408 *Maesa membranacea.*

HOW, F. C.—Continued.
72431 *Ardisia villosa* var. *oblanceolata.*
72474 *Ardisia quinquegona* var. *oblonga.*
72615 *Ardisia obtusa vel aff.*
72728 *Ardisia gigantifolia.*
72747 *Ardisia villosoides,* TYPE.
72778 *Ardisia densilepidotula.*
73036 *Ardisia quinquegona.*
73043 *Ardisia* sp.
73161 *Embelia ribes.*
73335 *Embelia oblongifolia.*
73345 *Rapanea linearis.*
73351 *Ardisia densilepidotula.*
73587 *Rapanea Faberi.*
73612 *Ardisia villosa.*
73660 *Rapanea Faberi.*
73665 *Ardisia pubivenula,* TYPE.
73702 *Ardisia villosa.*
73828 *Rapanea linearis.*

HOW, F. C., and N. K. CHUN.
70063 *Rapanea linearis.*
70098 *Ardisia quinquegona.*
70101 *Embelia ribes.*
70118 *Embelia laeta.*
70142 *Ardisia elegans.*
70165 *Ardisia densilepidotula.*
70170 *Rapanea neriifolia.*
70215 *Ardisia crassinervosa.*

HU, H. H.
159 *Maesa japonica.*
218 *Maesa japonica.*
828 *Ardisia japonica.*
888 *Maesa japonica.*
948 *Maesa japonica.*
1124 *Ardisia crenata.*
1133 *Embelia rudis.*
1527 *Maesa japonica.*
See also Fong.—Communicated by H. H. Hu.

HUGH, REV.
(*1899*) *Ardisia crenata.*

KANEHIRA, R.
3135 *Ardisia quinquegona.*
3231 *Ardisia quinquegona.*
3237 *Ardisia quinquegona.*
3243 *Maesa tenera.*
3266 *Rapanea neriifolia.*
3284 *Ardisia crenata.*

KANEHIRA, R.—Continued.
3315 Rapanea neriifolia.
3320 Ardisia Sieboldii.
3361 Rapanea neriifolia.
3363 Maesa tenera.
3431 Maesa tenera.

KANEHIRA, R., and S. SASAKI.
27 Maesa japonica.

KATSUMATA. *See* Hongkong Botanical Garden, Herbarium of.

KATUMADA, Z. *See* Formosa, Herbarium of the government of.

KAWAKAMI, T.
41 Maesa tenera.

KAWAKAMI, T., and U. MORI.
1963 Maesa tenera.
3547 Maesa japonica.

KAWAKAMI, T., U. MORI, and G. NAKAHARA.
1352 Maesa japonica.

KENG, Y. L.
40 Maesa japonica.
119 Ardisia punctata.
227 Rapanea neriifolia.
237 Ardisia crenata.
397 Embelia rudis.
743 Maesa japonica.
795 Ardisia crenata.
1162 Ardisia crenata.

KO, S. P.
50102 Ardisia elegans.
50263 Rapanea neriifolia.
51267 Ardisia caudata?
51432 Ardisia punctata var. *latifolia*, TYPE.
51798 Rapanea neriifolia.
52136 Rapanea linearis.
52163 Ardisia obtusa.
52291 Embelia ribes.
52559 Embelia rudis.
52621 Ardisia affinis.
53381 Ardisia affinis.
55134 Maesa Balansae.
55174 Ardisia elegans.
55316 Ardisia quinquegona.
55352 Ardisia virens.
55353 Ardisia filiformis.
55478 Ardisia mamillata.
55579 Embelia ribes.

KO, S. P.—Continued.
55651 Embelia subcoriacea.
55752 Rapanea kwangsiensis.
55935 Ardisia crenata.
55963 Embelia parviflora.
56023 Ardisia olivacea, TYPE.
56039 Ardisia primulifolia.

KYUSHU IMPERIAL UNIVERSITY, HERBARIUM OF.

KUNTZE, OTTO.
3300 Ardisia japonica.
3424 Embelia laeta.
3429 Ardisia crenata.
3514 Maesa perlarius.
3580 Maesa perlarius.

KWOAK, S. P.
80031 Ardisia affinis.

KYUSHU IMPERIAL UNIVERSITY, Herbarium of.
1630 (Takenouchi) Ardisia japonica.
1641 (R. Koketsu) Maesa japonica.

LABORDE. *See* Bodinier, E.

LAU, S. K.
24 Ardisia quinquegona.
32 Ardisia densilepidotula.
79 Ardisia elegans.
143 Ardisia quinquegona.
236 Maesa Balansae.
331 Ardisia densilepidotula.
354 Rapanea linearis.
509 Aegiceras corniculata.
628 Ardisia punctata.
637 Ardisia quinquegona.
777 Maesa perlarius.
807 Maesa japonica.
810 Embelia parviflora.
820 Embelia oblongifolia.
833 Embelia longifolia.
855 Ardisia elegans.
870 Embelia oblongifolia.
900 Ardisia gigantifolia.
911 Ardisia pusilla.
914 Maesa japonica.
927 Ardisia pusilla.
928 Ardisia mamillata.
940 Embelia longifolia.
963 Ardisia primulifolia.

LAU, S. K.—Continued.

970 Ardisia mamillata.
971 Ardisia chinensis.
1010 Maesa perlarius.
1052 Maesa Balansae.
1103 Embelia scandens.
1186 Ardisia obtusa.
1343 Ardisia quinquegona.
1500 Ardisia densilepidotula.
1534 Embelia ribes.
1727 Embelia scandens.
1769 Embelia laeta.
1798 Ardisia elegans.
1838 Ardisia densilepidotula.
1966 Rapanea neriifolia.
1999 Ardisia chinensis.
2097 Ardisia punctata.
2223 Maesa perlarius.
2224 Ardisia quinquegona.
2267 Embelia parviflora.
2285 Ardisia mamillata.
2530 Embelia longifolia.
2688 Maesa perlarius.
2734 Myrsine semiserrata.
2778 Ardisia elegans.
2812 Maesa Balansae.
2905 Embelia ribes.
2918 Rapanea neriifolia.
2979 Maesa perlarius.
2982 Ardisia quinquegona.
3116 Rapanea affinis.
3156 Ardisia elegans.
3192 Embelia ribes.
3307 Embelia scandens.
3336 Rapanea linearis.
3405 Maesa Balansae.
3421 Ardisia obtusa.
3478 Embelia ribes.
3480 Maesa perlarius.
3583 Ardisia quinquegona.
3721 Ardisia densilepidotula.
3983 Embelia laeta.
4000 Maesa japonica.
4070 Ardisia chinensis.
4193 Ardisia gigantifolia.
4257 Ardisia crenata.
4383 Maesa japonica.
4686 Maesa japonica.
4779 Embelia rudis.
4824 Ardisia chinensis.
4839 Ardisia Hanceana.

LAU, S. K.—Continued.

4874 Maesa Balansae.
4995 Ardisia elegans?
5014 Embelia scandens.
5069 Ardisia densilepidotula.
5127 Embelia ribes.
5202 Rapanea neriifolia.
5226 Maesa acuminatissima.
5285 Ardisia quinquegona.
5429 Embelia oblongifolia.
5459 Ardisia obtusa.
5807 Maesa Balansae.
5815 Ardisia obtusa ?
5868 Ardisia humilis.
5910 Rapanea linearis.
6146 Rapanea neriifolia.
6147 Embelia ribes.
6161 Maesa perlarius.
6206 Ardisia quinquegona.
6278 Ardisia crassinervosa.
6333 Embelia laeta.
6366 Ardisia quinquegona.
24381 Ardisia elegans.
25241 Maesa japonica.
25432 Rapanea affinis.
25452 Ardisia primulifolia.
25458 Rapanea Faberi.
25460 Ardisia elegans.
25464 Embelia oblongifolia.
25468 Maesa perlarius.
25710 Embelia oblongifolia.
25757 Maesa japonica.
25848 Ardisia villosa var. *oblanceolata.*
25938 Ardisia quinquegona.
25946 Ardisia villosa.
26059 Embelia oblongifolia.
26061 Ardisia crassinervosa.
26117 Ardisia quinquegona.
26302 Ardisia retroflexa, TYPE.
26369 Maesa japonica.
26374 Rapanea Faberi.
26644 Ardisia villosa var. *oblanceolata.*
26691 Ardisia densilepidotula.
26877 Ardisia obtusa.
26976 Ardisia quinquegona var. *oblonga.*
27059 Maesa Balansae.
27141 Ardisia gigantifolia.
27253 Rapanea affinis.

LAU, S. K.—Continued.
27296 Ardisia villosa.
27329 Ardisia obtusa.
27353 Ardisia Maclurei.
27381 Ardisia ordinata, TYPE.
27467 Ardisia porifera, TYPE.
27475 Ardisia densilepidotula.
27663 Ardisia obtusa.
27710 Rapanea linearis.
28049 Embelia parviflora.
28257 Embelia scandens.
28275 Embelia oblongifolia.
28389 Embelia ribes.
28472 Maesa japonica.
28493 Ardisia ensifolia, TYPE.
28587 Myrsine semiserrata.
28653 Maesa japonica.

LAU, S. Y.
20159 Ardisia Fordii.
20168 Ardisia quinquegona.
20216 Embelia ribes.
20268 Maesa tenera.
20273 Ardisia crenata.
20285 Ardisia punctata.
20361 Maesa salicifolia.

LEI, C. I.
11 Ardisia quinquegona.
203 Maesa perlarius.
240 Embelia ribes.
250 Ardisia elegans.
256 Maesa laxiflora.
301 Rapanea linearis.
354 Maesa parvifolia.
356 Maesa perlarius.
362 Embelia laeta.
372 Embelia ribes.
393 Maesa laxiflora.
505 Ardisia obtusa.
725 Ardisia elegans.
754 Embelia oblongifolia.
814 Ardisia crassinervosa.
853 Ardisia quinquegona.
972 Rapanea linearis.

LEVINE, C. O. *See* Canton Christian College.

LI, Y.
10637 Ardisia elegans.

LI, Y. Y. *See* Fan, C. S., and Y. Y. Li.

LIANG, H. Y.
61338 Ardisia brevicaulis.
61502 Ardisia obtusa.
61503 Ardisia humilis.
61609 Ardisia elegans.
61666 Embelia ribes.
61883 Embelia scandens.
61946 Ardisia densilepidotula.
62032 Ardisia villosa var. *oblanceolata.*
62050 Ardisia elegans.
62063 Ardisia nervosa.
62355 Maesa perlarius.
62370 Ardisia quinquegona.
62371 Maesa acuminatissima.
62598 Ardisia elegans.
62602 Ardisia densilepidotula.
62684 Ardisia villosa.
62699 Maesa acuminatissima.
62776 Ardisia densilepidotula.
62859 Rapanea linearis.
62894 Ardisia humilis.
63197 Maesa acuminatissima.
63242 Maesa perlarius.
63246 Maesa Balansae.
63247 Ardisia nervosa, TYPE.
63274 Ardisia elegans.
63281 Maesa consanguinea.
63283 Maesa Balansae ?
63522 Ardisia densilepidotula.
63675 Rapanea neriifolia.
63680 Rapanea neriifolia.
63713 Rapanea neriifolia.
63746 Rapanea neriifolia.
63785 Ardisia quinquegona.
63801 Maesa Balansae.
64051 Embelia oblongifolia.
64061 Embelia ribes.
64099 Embelia oblongifolia.
64207 Rapanea neriifolia.
64237 Maesa perlarius.
64238 Ardisia densilepidotula.
64317 Embelia oblongifolia.
64318 Maesa perlarius.
64319 Maesa perlarius.
64320 Ardisia elegans.
64410 Maesa membranacea.
64545 Embelia ribes.
64639 Embelia laeta.
64663 Embelia ribes.
64708 Maesa laxiflora.

LIANG, H. Y.—Continued.
64749 Ardisia quinquegona var. *oblonga.*
64897 Maesa membranacea.
64920 Maesa perlarius.
64937 Embelia ribes.
65009 Maesa perlarius.
65017 Ardisia obtusa.
65018 Ardisia elegans.
65022 Ardisia densilepidotula.
65077 Embelia oblongifolia.
65078 Embelia oblongifolia.
65088 Embelia ribes.
65162 Ardisia densilepidotula.
65168 Embelia oblongifolia.
65225 Ardisia obtusa.
65246 Rapanea affinis.
65275 Maesa acuminatissima.
65278 Ardisia quinquegona.
65356 Maesa Balansae.
65371 Maesa Balansae.
65421 Rapanea linearis.
65434 Ardisia humilis.
65864 Maesa japonica.
66021 Maesa Balansae.
66024 Ardisia crassinervosa.
66030 Maesa Balansae.
66048 Ardisia quinquegona.
66117 Maesa Balansae.
66118 Ardisia crassinervosa.
66309 Maesa Balansae.
66328 Maesa Balansae.
66467 Maesa perlarius.
66474 Ardisia quinquegona
66707 Embelia subcoriacea.
66761 Ardisia quinquegona.
66809 Ardisia sp.
66857 Maesa tenera.
67396 Maesa sp. (immature).
69329 Rapanea linearis.
69350 Rapanea neriifolia var. *yunnanensis.*
69403 Ardisia Faberi.
69406 Ardisia villosa var. *latifolia.*
69543 Rapanea neriifolia.
69556 Maesa tenera.
69643 Ardisia pubivenula.
69701 Ardisia Fordii.
69756 Ardisia maculosa.
69850 Embelia longifolia.

LIANG, H. Y.—Continued.
70012 Ardisia villosa var. *latifolia.*
70026 Maesa perlarius.
70071 Ardisia primulifolia.
70080 Embelia parviflora.

LIN, YU-TAI. *See* Fukien Christian University.

LING, KAN. *See* Nanking, Herbarium of the University of.

LINGNAN UNIVERSITY. *See* Canton Christian College.

LIOU, TCHEN-NGO.
880 Rapanea neriifolia.
7578 Ardisia punctata.
7584 Ardisia triflora.

LIU, YU-SHIH.
1041 Maesa hupehensis.
1287 Maesa montana.
1637 Maesa hupehensis.
1687 Ardisia brevicaulis.
1768 Maesa hupehensis.
1778 Myrsine semiserrata.
1826 Maesa hupehensis.
2013 Ardisia crispa var. *Dielsii.*
2014 Ardisia crispa.

LUH, C. Y.
1071 Ardisia japonica.

LUK, TAK. *See* Canton Christian College.

MAIRE, E. E.
17 Embelia subcoriacea.
32 Myrsine africana.
314 Myrsine africana.
315 Myrsine africana.
856 Myrsine africana.
2851 Maesa montana.
3725 Series B *Myrsine africana.*
7383 Myrsine africana.

MARTIN, L. *See* Bodinier, E.

MASAMUNE, G.
July 14, 1928. *Myrsine marginata.*
July 23, 1924. *Ardisia japonica* var. *angusta.*
August 29, 1926. *Rapanea neriifolia.*

MATUDA, E.
259 Maesa japonica.
4283 Maesa japonica.
See also Formosa, Herbarium of the Government of.

MCCLURE, F. A.
20025 Ardisia obtusa.
20036 Ardisia obtusa.
20106 Ardisia virens.
See also Canton Christian College.

MELL, R.
264 Ardisia quinquegona.
266 Maesa salicifolia.
343 Ardisia quinquegona.
644 Maesa tenera?
645 Embelia rudis.
646 Ardisia pusilla.
709 Ardisia punctata.
714 Ardisia pusilla.

MERRILL, E. D.
10217 Ardisia quinquegona.
10235 Maesa japonica.
10323 Ardisia elegans ?
10698 Maesa japonica.
10961 Maesa perlarius.
11020 Embelia rudis.
11048 Ardisia punctata.
11084 Ardisia quinquegona.
11094 Ardisia primulifolia.
11116 Ardisia Hanceana.

METCALF, F. P. *See* Fukien Christian University.

MEYER, F. N.
1466 Ardisia japonica.

MISIMA, KENTARO. *See* Shiota, K., Herbarium of.

MORSE, H. B.
329 Maesa Balansae.
337 Maesa perlarius.
389 Maesa perlarius.
402 Maesa Balansae.
409 Maesa Balansae.
455 Maesa Balansae.
587 Ardisia tenera.

MORSE, H. B.—Continued.
644 Ardisia elegans.
708 Ardisia brunnescens, TYPE.

MORSE, W. J. *See* Dorsett, P. H., and W. J. Morse.

NAGASAWA, S.
316 Maesa tenera.

NAKAHARA, G.
1905 Ardisia quinquegona.

NANKING, HERBARIUM OF THE UNIVERSITY OF.[75]
612 Ardisia japonica.
2382 (Steward) Ardisia japonica.
2898 (Steward) Ardisia japonica.
3471 (Steward) Maesa japonica.
3576 (Steward) Myrsine africana.
3619 (W. Y. Chun) Ardisia crenata.
3621 (W. Y. Chun) Ardisia japonica.
3640 (W. Y. Chun) Myrsine africana.
3848 (W. Y. Chun) Ardisia crispa.
3862 (W. Y. Chun) Maesa hupehensis.
3964 (W. Y. Chun) Ardisia japonica (in U. S. N. H.).
3964 (W. Y. Chun) Ardisia crenata (in Arn. Arb.).
3982 (W. Y. Chun) Myrsine africana.
4272 (W. Y. Chun) Ardisia japonica.
4395 (W. Y. Chun) Myrsine africana.
4703 (Steward) Ardisia japonica.
5603 (W. Y. Chun) Embelia ribes.

[75] The specimens collected by W. Y. Chun in Hainan in 1919–1920 and 1922 are often cited as Chun numbers, but they properly belong to the herbarium of the University of Nanking series.

NANKING, ETC.—Continued.
5691 (*W. Y. Chun*) *Myrsine africana.*
5734 (*W. Y. Chun*) *Embelia ribes.*
5778 (*W. Y. Chun*) *Embelia laeta.*
5840 (*W. Y. Chun*) *Ardisia elegans.*
5904 (*W. Y. Chun*) *Ardisia quinquegona.*
5945 (*W. Y. Chun*) *Embelia ribes.*
5946 (*W. Y. Chun*) *Embelia laeta.*
5958 (*W. Y. Chun*) *Maesa perlarius.*
5962 (*W. Y. Chun*) *Embelia oblongifolia.*
6361 (*W. Y. Chun*) *Embelia oblongifolia.*
6409 (*W. Y. Chun*) *Ardisia obtusa.*
6600 (*W. Y. Chun*) *Ardisia obtusa.*
6639 (*W. Y. Chun*) *Maesa tenera.*
6657 (*W. Y. Chun*) *Ardisia quinquegona.*
6712 (*W. Y. Chun*) *Ardisia quinquegona.*
6762 (*W. Y. Chun*) *Ardisia quinquegona.*
6816 (*W. Y. Chun*) *Embelia ribes.*
6840 (*W. Y. Chun*) *Ardisia elegans.*
6866 (*W. Y. Chun*) *Maesa acuminatissima.*
7050 (*W. Y. Chun*) *Ardisia elegans.*
7059 (*K. Y. Chun*) *Ardisia quinquegona.*
7126 (*W. Y. Chun*) *Rapanea Faberi?*
7304 (*Ling Kan*) *Maesa japonica.*
7326 (*Ling Kan*) *Embelia parviflora.*

NANKING, ETC.—Continued.
7328 (*Ling Kan*) *Rapanea neriifolia.*
7584 (*R. C. Ching*) *Ardisia crenata.*
7852 (*Ling Kan*) *Ardisia crenata.*
12531 (*Ling Kan*) *Ardisia japonica.*
14441 (*C. Y. Chiao*) *Ardisia japonica.*
14611 (*C. Y. Chiao*) *Ardisia crenata.*
14687 (*C. Y. Chiao*) *Maesa japonica.*
15253 (*Y. Chen*) *Myrsine africana.*

NORTON, J. B.
1355 Ardisia crispa.

ODASHIMA, K. *See* Taihoku Imperial University, Herbarium of.

OKADA, YOSHISHISE. *See* Shiota, K., Herbarium of.

OKAMURA, KUNIO. *See* Shiota, K., Herbarium of.

OLDHAM, R.
300 Ardisia quinquegona.
301 Ardisia Sieboldii.
302 Maesa tenera.
303 Maesa tenera.
305 Maesa tenera.
306 Ardisia virens.
550 Rapanea neriifolia.
551 Rapanea neriifolia.
552 Maesa japonica.
553 Ardisia japonica.
555 Ardisia crenata.

PIERRE, L.
5396 Maesa perlarius.

PLAYFAIR.
253 Rapanea lineris.

PRICE, W. R.
10 Maesa tenera.
117 Maesa tenera.
772 Maesa tenera.
1111 Maesa tenera.
1455 Maesa japonica.

ROBINSON, C. B.
1564 Maesa perlarius.
ROCK, J. F.
2393 Ardisia maculosa.
2422 Maesa montana.
2463 Embelia oblongifolia.
2488 Embelia parviflora.
2508 Ardisia solanacea.
2580 Maesa permollis.
2603 Rapanea neriifolia var. *yunnanensis.*
2605 Ardisia solanacea.
2644 Embelia sessiliflora.
2679 Embelia sessiliflora.
2753 Rapanea neriifolia var. *yunnanensis.*
2788 Rapanea neriifolia var. *yunnanensis.*
2882 Maesa montana.
2984 Rapanea neriifolia var. *yunnanensis.*
4071 Myrsine semiserrata.
6200 Myrsine semiserrata.
6507 Myrsine africana.
6879 Embelia vestita.
7001 Myrsine semiserrata.
7144 Ardisia crenata.
7194 Maesa montana.
7199 Maesa argentea ?
7264 Embelia floribunda.
7294 Myrsine semiserrata.
7347 Myrsine semiserrata.
7523 Myrsine semiserrata.
7541 Ardisia crenata.
7576 Myrsine semiserrata.
7585 Embelia vestita.
7625 Myrsine semiserrata.
7671 Embelia vestita.
7672 Ardisia crenata.
7690 Embelia floribunda.
7704 Rapanea neriifolia var. *yunnanensis.*
7711 Embelia floribunda.
7713 Embelia floribunda.
7799 Myrsine africana.
7870 Embelia vestita.
7890 Embelia vestita.
7891 Myrsine semiserrata.
7892 Embelia floribunda.
7965 Myrsine semiserrata.
ROCK, J. F.—Continued.
7971 Maesa montana.
8098 Myrsine semiserrata.
8106 Rapanea neriifolia var. *yunnanensis.*
8898 Myrsine africana.
8901 Myrsine semiserrata.
10557 Myrsine semiserrata.
11586 Myrsine africana.
12011 Myrsine africana.
12019 Myrsine semiserrata.
16106 Myrsine africana.
17086 Embelia Gamblei.
24323 Myrsine africana.
ROSTHORN, A. VON. *See* Bock, C., and A. von Rosthorn.
SADUKUNI, MURAI. *See* Shiota, K., Herbarium of.
SAKAMOTO, SHÔHIKO. *See* Shiota, K., Herbarium of.
SASAKI, S. *See* Formosa, Herbarium of the Government of.
SAVATIER, L.
800 Maesa japonica.
801 Ardisia japonica.
SCHNEIDER, C.
97 Myrsine africana.
194 Myrsine africana.
260 Myrsine africana.
268 Myrsine africana.
288 Rapanea neriifolia var. *yunnanensis.*
357 Myrsine africana.
368 Myrsine semiserrata.
384 Myrsine semiserrata.
663 Maesa japonica.
676 Maesa montana.
3398 Myrsine africana.
3787 Embelia floribunda.
3922 Myrsine africana.
4063 Myrsine semiserrata.
SEGUIN. *See* Bodinier, E.
SEKI, SEIJIRO. *See* Shiota, K., Herbarium of.
SHIMIZU, SIROKU. *See* Shiota, K., Herbarium of.
SHIOTA, K., HERBARIUM OF.
3217 (Sadukuni, Murai) Ardisia crispa.

SHIOTA, K., HERBARIUM OF.—Ctd.
3218 (*Shimizu Siroku*) *Ardisia cornudentata.*
3219 *Ardisia japonica.*
3220 (*Sakamoto Shôhiko*) *Ardisia Sieboldii.*
3221 (*Okamura Kunio*) *Ardisia pusilla.*
3222 (*Okada Yoshishise*) *Maesa japonica.*
3917 (*Misima Kentaro*) *Maesa japonica.*
3921 (*Okada Yoshishise*) *Maesa japonica.*
4536 (*Seki Seijiro*) *Ardisia japonica.*
4777 *Ardisia crenata.*
5365 *Ardisia pusilla.*
5366 *Ardisia crenata.*
5794 *Ardisia japonica.*
6028 *Maesa japonica.*
7318 *Ardisia crispa.*
8511 *Maesa japonica.*
8892 *Ardisia japonica.*

SILVESTRI, C.
1706 *Myrsine africana.*
3133 *Myrsine africana.*

SIMADA, Y. *See* Formosa, Herbarium of the Government of; Taihoku Imperial University, Herbarium of.

SIN, S. S.
9118 *Ardisia chinensis.*
9182 *Embelia rudis.*
9940 *Ardisia Hanceana.*
11105 *Ardisia brevicaulis.*
11395 *Ardisia affinis.*
11520 *Embelia rudis.*
11521 *Ardisia Hanceana.*
11837 *Ardisia Hanceana.*
11900 *Ardisia pusilla.*

SMITH, ERYL.
6 *Ardisia villosa.*
12 *Maesa perlarius.*

SMITH, H.
1637 *Myrsine africana.*

SOMA, T.
964 *Maesa perlarius.*
1039 *Maesa tenera.*
1147 *Maesa tenera.*

SOO, W. H.
67600 *Maesa montana.*
67782 *Ardisia depressa.*
67800 *Ardisia quinquegona.*
67923 *Ardisia depressa.*
68156 *Ardisia filiformis.*
68428 *Ardisia elegans.*
68497 *Maesa ramentacea.*

STEWARD, A. N. *See* Nanking, Herbarium of the University of.

STEWARD, A. N., and C. C. CHEO.
42 *Myrsine semiserrata.*
144 *Ardisia crenata.*
315 *Maesa insignis.*
542 *Ardisia quinquegona.*
547 *Ardisia villosa.*
563 *Maesa montana.*
574 *Embelia ribes.*
580 *Embelia oblongifolia.*
590 *Ardisia villosa.*
673 *Ardisia corymbifera.*
763 *Ardisia elegans.*
784 *Ardisia mamillata.*
792 *Ardisia quinquegona.*
798 *Embelia parviflora.*
805 *Embelia rudis.*
841 *Embelia oblongifolia.*
934 *Ardisia chinensis.*
1156 *Ardisia quinquegona.*

STEWARD, A. N., C. Y. CHIAO, and C. C. CHEO.
155 *Ardisia bicolor*, TYPE.
426 *Ardisia japonica.*
463 *Ardisia crispa* var. *Dielsii.*
546 *Embelia rudis.*
762 *Maesa japonica.*
805 *Embelia rudis.*
855 *Ardisia crenata.*

SUN, S. C. *See* Wu-Han University, Herbarium of the National.

TAAM, Y. W.
127 *Ardisia punctata.*
273 *Ardisia mamillata.*
274 *Ardisia chinensis.*
308 *Ardisia primulifolia.*
318 *Ardisia mamillata.*
324 *Ardisia quinquegona.*
391 *Rapanea neriifolia.*

TAAM, Y. W.—Continued.
394 Ardisia mamillata.
396 Embelia longifolia.
414 Rapanea neriifolia.
425 Maesa japonica.
676 Rapanea neriifolia.
750 Rapanea neriifolia.
846 Ardisia elegans.
1012 Ardisia mamillata.
1020 Ardisia mamillata.
1027 Ardisia quinquegona.

TAIHOKU IMPERIAL UNIVERSITY, HERBARIUM OF.
10983 (*Tanaka & Shimada*) *Maesa tenera.*
11080 (*Tanaka & Shimada*) *Ardisia Sieboldii.*
11155 (*Tanaka & Shimada*) *Ardisia quinquegona.*
11165 (*Tanaka & Shimada*) *Maesa tenera.*
17760 (*K. Odashima*) *Rapanea neriifolia.*
17805 (*K. Odashima*) *Rapanea neriifolia.*

TAKENOUCHI, M. *See* Kyushu Imperial University, Herbarium of.

TANAKA, S.
135 Maesa tenera.
See also Taihoku Imperial University, Herbarium of.

TANAKA, T.
77 Ardisia Sieboldii.
397 Ardisia crenata.
461 Ardisia cornudentata.
397 Ardisia crenata.
1753 Ardisia quinquegona.
5393 Maesa tenera.

TANG SIN-GING. *See* Fukien Christian University.

TAQUET.
1093 Ardisia pusilla.
1094 Ardisia japonica.
2973 Ardisia crenata.
2974 Ardisia crenata.
2975 Ardisia crenata.
2976 Ardisia japonica.
2977 Ardisia japonica.
3126 Ardisia crenata.

TAQUET.—Continued.
4470 Ardisia pusilla.
55 Myrsine africana.
56 Myrsine africana.
307 Rapanea neriifolia var. *yunnanensis.*
317 Rapanea neriifolia var. *yunnanensis.*
328 Rapanea neriifolia var. *yunnanensis.*
356 Myrsine semiserrata.
571 Myrsine semiserrata.
573 Myrsine semiserrata.

TENG, S. W.
586 Ardisia crispa var. *Dielsii.*
1477 Ardisia crenata.
90163 Maesa japonica.
90403 Rapanea neriifolia.
90419 Ardisia crispa.
90447 Myrsine africana.
90569 Ardisia Faberi.
90578 Maesa insignis.
90579 Embelia subcoriacea.
90825 Rapanea kwangsiensis.
90902 Ardisia yunnanensis.
90946 Ardisia quinquegona.
90998 Maesa perlarius.

TO, KANG-PENG. *See* Canton Christian College.

TSAI, H. T.
51399 Maesa montana.
51403 Ardisia brevicaulis.
51432 Ardisia crenata.
51459 Maesa japonica.
51472 Embelia vestita.
51486 Maesa japonica.
51516 Myrsine semiserrata.
51518 Myrsine semiserrata.
51527 Maesa montana.
51535 Embelia oblongifolia.
51550 Maesa montana.
51587 Embelia oblongifolia.
51590 Maesa japonica.
51610 Maesa indica.
51614 Maesa japonica.
51615 Embelia oblongifolia.
51632 Embelia polypodioides.
51656 Maesa japonica.
51665 Ardisia virens.

TSAI, H. T.—Continued.

51679 Embelia polypodioides.
51680 Myrsine semiserrata.
51705 Myrsine semiserrata.
51708 Myrsine semiserrata.
51714 Embelia oblongifolia.
51729 Embelia parviflora.
51731 Ardisia crispa var. *amplifolia.*
51740 Ardisia caudata.
51744 Embelia polypodioides.
51759 Maesa japonica.
51760 Myrsine marginata.
51763 Ardisia Faberi.
51771 Maesa insignis.
51788 Myrsine semiserrata.
51832 Embelia oblongifolia.
51837 Embelia parviflora.
51852 Rapanea neriifolia.
51865 Ardisia gigantifolia.
51878 Embelia oblongifolia.
51906 Maesa montana.
51915 Maesa montana.
51926 Ardisia maculosa.
52144 Myrsine semiserrata.
52347 Ardisia crenata.
52354 Myrsine semiserrata.
52355 Myrsine semiserrata.
52410 Ardisia virens.
52418 Maesa montana.
52444 Embelia ribes.
52454 Ardisia corymbifera.
52458 Rapanea Faberi.
52468 Ardisia depressa.
52488 Embelia ribes.
52491 Embelia ribes.
52500 Maesa indica.
52512 Ardisia crispa var. *amplifolia.*
52525 Rapanea neriifolia var. *yunnanensis.*
52548 Embelia oblongifolia.
52594 Ardisia depressa.
52607 Embelia oblongifolia.
52622 Ardisia depressa.
52637 Maesa ramentacea.
52848 Myrsine africana.
52862 Rapanea neriifolia var. *yunnanensis.*
53019 Myrsine semiserrata.
53034 Myrsine semiserrata.

TSAI, H. T.—Continued.

53035 Maesa montana.
53084 Ardisia maculosa.
53089 Maesa montana.
53097 Maesa argentea.
53169 Maesa montana.
53170 Embelia ribes.
53181 Maesa montana.
53193 Rapanea neriifolia var. *yunnanensis.*
53200 Ardisia solanacea.
53214 Embelia oblongifolia.
53217 Ardisia corymbifera.
53220 Maesa montana.
53245 Rapanea neriifolia var. *yunnanensis.*
53308 Maesa montana.
53314 Maesa indica.
53445 Rapanea neriifolia var. *yunnanensis.*
53500 Myrsine africana.
53535 Myrsine africana
53543 Myrsine africana.
53553 Myrsine africana.
54285 Maesa montana.
54299 Ardisia crenata.
54351 Myrsine semiserrata.
54417 Myrsine semiserrata.
54476 Myrsine semiserrata.
54480 Embelia Gamblei.
54503 Embelia floribunda.
54519 Myrsine semiserrata.
54531 Rapanea neriifolia.
54576 Myrsine semiserrata.
54584 Maesa montana.
54585 Embelia subcoriacea.
54592 Myrsine semiserrata.
54595 Myrsine semiserrata.
54662 Embelia floribunda.
54723 Ardisia maculosa.
54744 Myrsine semiserrata.
54760 Myrsine semiserrata.
54800 Myrsine semiserrata.
54811 Embelia floribunda.
54818 Embelia floribunda.
54824 Embelia floribunda.
54865 Embelia floribunda.
54882 Maesa montana.
54901 Ardisia crenata.
54903 Embelia floribunda.
54941 Myrsine semiserrata.

TSAI, H. T.—Continued.

54970 Maesa montana.
55004 Myrsine semiserrata.
55028 Embelia floribunda.
55040 Maesa montana.
55043 Maesa montana.
55060 Ardisia virens.
55094 Embelia ribes.
55095 Embelia parviflora.
55098 Maesa sp. (diseased).
55160 Embelia oblongifolia.
55182 Maesa montana.
55194 Maesa montana.
55200 Embelia ribes.
55210 Maesa montana.
55256 Ardisia corymbifera.
55320 Ardisia corymbifera.
55323 Ardisia maculosa.
55371 Ardisia depressa.
55433 Maesa indica.
55486 Maesa montana.
55492 Embelia ribes.
55501 Embelia floribunda.
55505 Embelia sessiliflora.
55524 Maesa montana.
55530 Myrsine semiserrata.
55544 Maesa montana.
55555 Myrsine semiserrata.
55592 Maesa montana.
55601 Myrsine semiserrata.
55624 Embelia sessiliflora.
55626 Ardisia corymbifera.
55631 Myrsine semiserrata.
55659 Maesa montana.
55671 Maesa montana.
55690 Embelia sessiliflora.
55705 Myrsine semiserrata.
55707 Myrsine semiserrata.
55725 Embelia subcoriacea.
55739 Myrsine semiserrata.
55767 Embelia sessiliflora.
55778 Embelia sessiliflora.
55800 Embelia subcoriacea.
55807 Ardisia solanacea.
55814 Maesa montana.
55841 Embelia sessiliflora.
55885 Myrsine semiserrata.
55901 Embelia subcoriacea.
55988 Maesa argentea.
55996 Myrsine semiserrata.
56308 Maesa montana.

TSAI, H. T.—Continued.

56326 Embelia parviflora.
56330 Ardisia virens.
56358 Embelia ribes.
56370 Myrsine semiserrata.
56376 Myrsine semiserrata.
56385 Maesa montana.
56404 Myrsine semiserrata.
56421 Embelia floribunda.
56456 Embelia sessiliflora.
56475 Myrsine semiserrata.
56479 Embelia floribunda.
56497 Embelia floribunda.
56520 Myrsine semiserrata.
56585 Myrsine semiserrata.
56608 Ardisia crenata.
56613 Myrsine semiserrata.
56638 Embelia floribunda.
56650 Rapanea neriifolia var. *yunnanensis.*
56664 Embelia ribes.
56707 Rapanea neriifolia var. *yunnanensis.*
56727 Maesa montana.
56752 Maesa montana.
56764 Maesa montana.
56793 Maesa montana.
56797 Embelia sessiliflora.
56807 Ardisia virens.
56824 Myrsine semiserrata.
56875 Maesa montana.
56919 Rapanea Faberi.
56925 Ardisia virens.
56967 Myrsine semiserrata.
56998 Myrsine semiserrata.
57116 Embelia ribes.
57123 Myrsine semiserrata.
58529 Myrsine semiserrata.
58697 Maesa montana.
58703 Maesa montana.
58759 Maesa montana.
58760 Embelia floribunda.
58766 Ardisia crenata.
58791 Embelia floribunda.
58832 Ardisia crenata.
58835 Myrsine semiserrata.
58838 Myrsine semiserrata.
59036 Myrsine semiserrata.
59081 Ardisia crenata ?
59094 Myrsine semiserrata.
59820 Myrsine semiserrata.

TSAI, H. T.—Continued.

60010 Ardisia virens.
60053 Ardisia virens.
60103 Ardisia virens.
60138 Ardisia maculosa.
60149 Embelia parviflora.
60185 Ardisia maculosa.
60256 Embelia ribes.
60264 Ardisia maculosa.
60292 Embelia oblongifolia.
60307 Ardisia corymbifera.
60326 Ardisia corymbifera.
60328 Ardisia virens.
60345 Ardisia conspersa.
60346 Ardisia virens.
60352 Maesa montana.
60384 Ardisia depressa.
60403 Embelia ribes.
60429 Ardisia virens.
60444 Maesa indica.
60455 Embelia ribes.
60519 Ardisia depressa.
60521 Ardisia conspersa.
60528 Ardisia maculosa.
60554 Embelia oblongifolia.
60557 Maesa permollis.
60570 Ardisia depressa.
60576 Maesa ramentacea.
60580 Maesa permollis.
60584 Ardisia virens.
60596 Embelia oblongifolia.
60599 Embelia parviflora.
60610 Ardisia corymbifera.
60621 Maesa ramentacea.
60647 Embelia oblongifolia.
60737 Embelia ribes.
60766 Maesa indica.
60831 Maesa ramentacea.
60906 Ardisia replicata.
61146 Ardisia conspersa.
61251 Ardisia depressa.
61304 Ardisia depressa.
61374 Maesa permollis.
61406 Ardisia virens.
61422 Embelia ribes.
61479 Embelia oblongifolia.
61542 Ardisia depressa.
61555 Embelia aberrans, TYPE.
61609 Ardisia depressa.
61672 Embelia ribes.
61678 Embelia oblongifolia.

TSAI, H. T.—Continued.

61686 Ardisia virens.
61872 Maesa ramentacea.
61945 Embelia ribes.
62003 Ardisia depressa.
62004 Maesa montana.
62022 Ardisia virens.
62051 Maesa montana.
62097 Ardisia virens.
62101 Embelia ribes.
62153 Rapanea neriifolia var. *yunnanensis.*
62171 Ardisia depressa.
62227 Embelia ribes.
62235 Ardisia virens.
62249 Maesa montana.
62317 Ardisia depressa.
62345 Embelia ribes.
62359 Maesa montana.

TSANG, WAI-TAK.

20007 Maesa perlarius.
20020 Maesa japonica.
20022 Embelia laeta.
20034 Embelia ribes.
20052 Ardisia quinquegona.
20086 Ardisia primulifolia.
20103 Maesa japonica.
20117 Myrsine marginata.
20160 Myrsine marginata.
20206 Rapanea neriifolia.
20215 Ardisia mamillata.
20427 Ardisia punctata.
20614 Myrsine marginata.
20637 Ardisia crenata.
20698 Embelia rudis.
20788 Ardisia brevicaulis.
20862 Ardisia crenata.
20882 Ardisia Hanceana.
20922 Ardisia primulifolia.
20944 Maesa japonica.
21009 Ardisia crenata.
21012 Ardisia quinquegona.
21047 Ardisia mamillata.
21062 Ardisia quinquegona.
21146 Rapanea neriifolia.
21165 Ardisia punctata.
21236 Ardisia Fordii.
21250 Ardisia Hanceana.
21506 Maesa japonica.
21550 Ardisia brevicaulis.
21713 Rapanea neriifolia.

TSANG, WAI-TAK.—Continued.

21717 Ardisia crenata.
21740 Ardisia quinquegona.
21838 Ardisia quinquegona.
21841 Embelia laeta.
21873 Maesa perlarius.
21876 Maesa Balansae.
21924 Embelia scandens.
21957 Maesa tenera.
21967 Embelia ribes.
21987 Maesa perlarius.
22054 Rapanea neriifolia.
22062 Ardisia chinensis.
22184 Embelia oblongifolia.
22249 Rapanea neriifolia var. *yunnanensis.*
22268 Ardisia villosa.
22274 Ardisia quinquegona.
22301 Maesa acuminatissima.
22355 Ardisia gigantifolia.
22383 Embelia ribes.
22393 Ardisia filiformis.
22500 Ardisia villosa.
22509 Ardisia elegans.
22552 Ardisia quinquegona.
22561 Rapanea neriifolia var. *yunnanensis.*
22567 Ardisia filiformis.
22872 Maesa japonica.
22917 Ardisia crispa var. *Dielsii.*
22985 Maesa perlarius.
23017 Ardisia mamillata.
23035 Ardisia quinquegona.
23040 Ardisia Fordii.
23128 Embelia parviflora.
23139 Embelia ribes.
23186 Maesa japonica.
23252 Ardisia primulifolia.
23256 Ardisia mamillata.
23265 Ardisia quinquegona.
23283 Embelia parviflora.
23284 Embelia longifolia.
23318 Embelia oblongifolia.
23340 Ardisia crenata.
23366 Ardisia pusilla.
23398 Maesa japonica.
23488 Rapanea neriifolia.
23566 Ardisia japonica.
23611 Maesa japonica.
23834 Maesa ramentacea.

TSANG, WAI-TAK.—Continued.

23857 Ardisia quinquegona.
23864 Ardisia chinensis.
23898 Embelia ribes.
23936 Ardisia mamillata.
23997 Maesa perlarius.
24047 Ardisia quinquegona.
24073 Rapanea neriifolia.
24150 Embelia longifolia.
24169 Ardisia villosa.
24184 Ardisia chinensis.
24302 Ardisia filiformis.
24324 Maesa perlarius.
24395 Embelia ribes.
24499 Ardisia gigantifolia.
24501 Maesa ramentacea.
24586 Embelia oblongifolia.
24603 Rapanea neriifolia.
24620 Rapanea neriifolia.
24636 Ardisia quinquegona.
24669 Embelia laeta.
24691 Embelia ribes.
24701 Ardisia quinquegona var. *hainanensis.*
24713 Rapanea neriifolia.
24715 Maesa acuminatissima.
24732 Ardisia villosa.
24733 Maesa perlarius.
24782 Ardisia filiformis.
24851 Myrsine semiserrata.
24903 Ardisia punctata.
24919 Embelia rudis.
24949 Rapanea neriifolia.
25044 Myrsine semiserrata.
25046 Embelia rudis.
25289 Ardisia chinensis.
25294 Ardisia crenata.
25399 Ardisia crenata.
25422 Ardisia primulifolia.
27712 Ardisia crispa.
27713 Ardisia Faberi.
27755 Ardisia crenata.
27777 Ardisia affinis.
28006 Ardisia japonica.
28251 Embelia longifolia.
28512 Embelia laeta.
28524 Ardisia mamillata.
28539 Ardisia punctata.
28547 Embelia ribes.
28548 Ardisia primulifolia.
28563 Maesa tenera.

TSANG, WAI-TAK.—Continued.
28585 Maesa perlarius.
28725 Maesa perlarius.
28762 Embelia laeta.
28769 Embelia ribes.
28781 Ardisia quinquegona.
28896 Embelia laeta.
See also Canton Christian College.

TSIANG, YING.
4 Embelia laeta.
29 Maesa perlarius.
59 Maesa japonica.
81 Embelia ribes.
171 Aegiceras corniculata.
174 Embelia laeta.
179 Maesa perlarius.
283 Embelia ribes.
285 Maesa japonica.
596 Rapanea neriifolia.
606 Ardisia punctata (in Arn. Arb.).
606 Ardisia crenata (in U. Calif.).
637 Ardisia punctata.
727 Maesa perlarius.
740 Ardisia quinquegona.
783 Rapanea neriifolia.
803 Rapanea neriifolia.
831 Ardisia punctata.
942 Ardisia quinquegona.
993 Maesa perlarius.
998 Ardisia villosa.
1166 Ardisia quinquegona.
1242 Maesa japonica.
1465 Embelia rudis.
1479 Maesa perlarius.
1507 Ardisia quinquegona.
1546 Ardisia punctata.
1638 Embelia ribes.
1660 Maesa perlarius.
1683 Embelia oblongifolia.
1716 Embelia laeta.
1724 Ardisia crenata.
1734 Ardisia punctata.
1742 Embelia ribes.
1759 Embelia ribes.
1904 Embelia laeta.
1922 Maesa tenera.
1976b Maesa perlarius.
2086 Ardisia quinquegona.

TSIANG, YING.—Continued.
2089 Ardisia villosa.
2103 Embelia ribes.
2117 Ardisia roseiflora.
2149 Maesa perlarius.
2233 Ardisia quinquegona.
2543 Rapanea linearis.
2631 Maesa tenera.
3415 Rapanea Faberi.
4142 Maesa japonica.
4200 Myrsine africana.
4288 Ardisia crenata.
4405 Maesa insignis.
4429 Ardisia crispa var. *Dielsii.*
4434 Ardisia crenata.
4561 Embelia rudis.
4567 Embelia rudis.
4622 Maesa insignis.
4760 Maesa japonica.
4768 Maesa insignis.
4860 Maesa perlarius.
4939 Myrsine africana.
5194 Maesa japonica.
5199 Maesa japonica.
5513 Ardisia japonica.
5535 Ardisia crispa var. *Dielsii.*
5591 Ardisia brevicaulis.
5619 Ardisia affinis.
5635 Maesa japonica.
6282 Maesa japonica.
6291 Embelia rudis.
6639 Ardisia crenata.
6727 Ardisia mamillata.
7132 Maesa japonica.
7133 Maesa japonica.
7152 Myrsine africana.
7502 Maesa japonica.
7508 Ardisia japonica.
7515 Ardisia japonica.
7516 Ardisia crispa.
7526 Ardisia brevicaulis.
7545 Ardisia crenata.
7623 Embelia pauciflora.
7694 Maesa japonica.
7697 Maesa japonica.
7758 Maesa japonica.
7761 Ardisia crispa var. *Dielsii.*
7806 Myrsine africana.

Tsiang, Ying.—Continued.
7869 Embelia pauciflora.
8003 Myrsine africana.
8009 Myrsine semiserrata.
8478 Ardisia japonica.
8517 Ardisia brevicaulis.
8813 Ardisia crispa var. *Dielsii.*
9259 Ardisia caudata.
9289 Myrsine semiserrata.
9290 Myrsine semiserrata.
9349 Myrsine semiserrata.
9824 Ardisia japonica.
10031 Ardisia crenata.
10064 Maesa japonica.
10160 Ardisia brevicaulis.
10309 Maesa japonica.
10409 Maesa japonica.
10598 Embelia rudis.
12015 Rapanea neriifolia var. *yunnanensis.*
12209 Maesa argentea.
12269 Ardisia arborescens.
12285 Maesa montana.
12015 Rapanea neriifolia var. *yunnanensis.*
12401 Ardisia corymbifera.
12469 Ardisia arborescens.
12491 Maesa indica.
12567 Maesa montana.
12611 Ardisia corymbifera.
12635 Embelia sessiliflora.
12677 Embelia subcoriacea.
12706 Maesa montana.
12848 Embelia subcoriacea.
12890 Maesa ramentacea.
12904 Maesa montana.
13111 Embelia procumbens.
13294 Maesa japonica.
13336 Maesa montana.
13352 Maesa indica.
13370 Maesa indica.
13410 Maesa insignis.
13413 Ardisia sp.
13539 Maesa indica.
See also Tso, C. L., and Y. Tsiang.

Tso, C. L.
20153 Maesa tenera.
20297 Ardisia quinquegona.
20312 Ardisia quinquegona.
20353 Embelia longifolia.
20363 Ardisia elegans.
20384 Embelia oblongifolia.
20400 Ardisia punctata.
20451 Embelia ribes.
20454 Ardisia elegans.
20550 Maesa tenera.
20609 Maesa japonica.
20674 Ardisia brevicaulis.
20719 Embelia ribes.
20792 Embelia longifolia.
20840 Myrsine marginata.
20842 Ardisia mamillata.
20843 Ardisia primulifolia.
20858 Embelia longifolia.
20949 Ardisia quinquegona.
21010 Myrsine marginata.
21053 Ardisia affinis.
21194 Ardisia elegans.
23051 Rapanea linearis.
23054 Ardisia humilis.
See also Chun, N. K., and C. L. Tso.

Tso, C. L., and Y. Tsiang.
2020 Embelia laeta.

Tsoong, K. K.
55 Maesa japonica.
D. 1133 Ardisia japonica.
2497 Embelia vestita.
2713 Embelia scandens.
4593 Ardisia quinquegona.
See also Canton Christian College.

Tsui, T. M.
58 Ardisia quinquegona.
120 Maesa perlarius.
121 Embelia ribes.
213 Ardisia quinquegona.
218 Ardisia quinquegona.
243 Rapanea neriifolia.
258 Aegiceras corniculata.
335 Embelia ribes.
356 Embelia ribes.
357 Ardisia elegans.

TSUI, T. M.—Continued.
392 Ardisia crenata.
492 Ardisia japonica.
837 Embelia rudis.
839 Maesa japonica.

TUTCHER, W. *See* Hongkong Botanical Garden, Herbarium of.

WANG and LING.
7340 Maesa perlarius.
7344 Ardisia quinquegona.
7388 Embelia parviflora.

WANG, C.
31169 Rapanea neriifolia.
32159 Ardisia punctata var. *latifolia.*
32289 Maesa insignis, TYPE.
32373 Rapanea neriifolia.
32445 Embelia laeta.
32757 Rapanea linearis.
32803 Ardisia obtusa.
32922 Ardisia densilepidotula.
33170 Ardisia nervosa.
33432 Ardisia quinquegona.
33563 Ardisia densilepidotula.
33746 Ardisia elegans.
34199 Ardisia elegans.
34215 Ardisia quinquegona var. *oblonga.*
34222 Ardisia densilepidotula.
34256 Ardisia densilepidotula.
34333 Ardisia humilis.
34474 Ardisia obtusa.
34513 Maesa membranacea.
34736 Ardisia densilepidotula.
34779 Maesa Balansae.
35055 Rapanea linearis.
35137 Maesa Balansae.
35220 Rapanea neriifolia.
35230 Ardisia mamillata.
35231 Rapanea Faberi.
35238 Ardisia villosa var. *ambovestita*, TYPE.
35358 Maesa acuminatissima.
35382 Maesa perlarius.
35410 Maesa perlarius.
35435 Ardisia elegans.
35462 Embelia ribes.
35502 Rapanea neriifolia.
35561 Maesa japonica.

WANG, C.—Continued.
35612 Rapanea Faberi.
35692 Embelia longifolia.
35698 Maesa perlarius.
35735 Embelia oblongifolia.
35756 Maesa consanguinea.
35776 Ardisia elegans.
35799 Embelia parviflora.
35909 Rapanea neriifolia.
35941 Rapanea neriifolia.
35981 Myrsine marginata.
35999 Myrsine marginata.
36020 Ardisia quinquegona var. *oblonga.*
36036 Ardisia Maclurei.
36055 Maesa acuminatissima.
36089 Embelia oblongifolia.
36108 Embelia oblongifolia.
36143 Ardisia quinquegona.
36184 Maesa perlarius.
36256 Ardisia obtusa.
36314 Ardisia elegans.
36459 Maesa perlarius.
36708 Ardisia villosa.
36796 Ardisia quinquegona.
36857 Myrsine marginata.
36906 Ardisia quinquegona.
39018 Maesa tenera.
39022 Ardisia elegans.
39041 Ardisia quinquegona.
39083 Rapanea neriifolia.
39122 Rapanea neriifolia.
39170 Embelia parviflora.
39195 Myrsine marginata.
39206 Embelia rudis.
39309 Myrsine marginata.
39358 Ardisia crispa var. *Dielsii.*
39384 Rapanea neriifolia.
39389 Ardisia chinensis.
39429 Myrsine elliptica, TYPE.
39443 Ardisia crispa.
39444 Rapanea neriifolia.
39475 Ardisia gigantifolia.
39589 Ardisia affinis.
39606 Ardisia primulifolia.
39948 Ardisia elegans.
39953 Rapanea neriifolia.
40093 Rapanea neriifolia.
40193 Ardisia affinis.
40232 Maesa japonica.

WANG, C.—Continued.
40310 Myrsine elliptica.
40410 Embelia oblongifolia.
40411 Embelia parviflora.
40445 Embelia rudis.
40565 Ardisia crispa var. *Dielsii.*
40570 Maesa japonica.
40571 Ardisia punctata.
40622 Embelia longifolia.
40635 Ardisia mamillata.
40654 Ardisia primulifolia.
40661 Embelia rudis.
40679 Ardisia primulifolia.
40693 Ardisia pusilla.
40889 Myrsine semiserrata.
40891 Ardisia affinis.
40912 Myrsine semiserrata.
41002 Maesa insignis.
41128 Embelia rudis.
41229 Ardisia yunnanensis.

WANG, C. W.
62650 Myrsine africana.
62663 Myrsine africana.
62785 Myrsine africana.
64149 Myrsine semiserrata.
64291 Myrsine semiserrata.
65053 Myrsine africana.
65398 Myrsine africana.
66572 Myrsine africana.
66600 Myrsine semiserrata.
66865 Myrsine semiserrata.
66878 Maesa rugosa.
66901 Ardisia crenata.
66984 Myrsine semiserrata.
67152 Ardisia crenata.
67253 Myrsine semiserrata.
67315 Myrsine semiserrata.
68303 Myrsine africana.
69102 Myrsine africana.
69291 Myrsine africana.
71515 Myrsine africana.
71819 Myrsine semiserrata.
71821 Myrsine semiserrata.
71823 Myrsine semiserrata.
71834 Maesa montana.
71883 Embelia sessiliflora.
71905 Maesa montana.
71938 Embelia subcoriacea.
71941 Rapanea neriifolia var. *yunnanensis.*

WANG, C. W.—Continued.
71977 Myrsine semiserrata.
72047 Myrsine semiserrata.
72072 Myrsine semiserrata.
72169 Embelia sessiliflora.
72177 Myrsine semiserrata.
72281 Ardisia virens.
72317 Myrsine semiserrata.
72349 Maesa argentea.
72402 Rapanea neriifolia var. *yunnanensis.*
72414 Myrsine semiserrata.
72439 Embelia procumbens.
72475 Myrsine semiserrata.
72478 Ardisia crenata.
72500 Maesa argentea.
72505 Myrsine semiserrata.
72507 Maesa montana.
72517 Embelia procumbens.
72532 Myrsine semiserrata.
72537 Ardisia crenata.
72587 Myrsine semiserrata.
72635 Embelia sessiliflora.
72750 Ardisia solanacea.
72807 Embelia sessiliflora.
72816 Maesa montana.
72925 Ardisia virens.
72937 Embelia parviflora.
72967 Maesa montana.
73122 Ardisia solanacea.
73503 Embelia sp.
73593 Ardisia depressa.
73648 Maesa montana.
73650 Ardisia maculosa.
73661 Ardisia virens.
73708 Ardisia villosa.
73798 Maesa montana.
73803 Rapanea neriifolia var. *yunnanensis.*
73809 Ardisia corymbifera.
73821 Embelia oblongifolia.
73822 Embelia parviflora.
73830 Maesa indica.
73872 Embelia sessiliflora.
73901 Embelia parviflora.
73914 Embelia oblongifolia.
74106 Embelia parviflora.
74125 Ardisia corymbifera.
74138 Ardisia villosa.
74158 Maesa montana.
74174 Ardisia virens.

WANG, C. W.—Continued.
74609 Ardisia arborescens.
74941 Ardisia depressa.
74999 Embelia oblongifolia.
75001 Embelia oblongifolia.
75065 Ardisia virens.
75092 Embelia sessiliflora.
75203 Ardisia villosa.
75227 Ardisia maculosa.
75357 Ardisia depressa.
75443 Ardisia solanacea.
75487 Ardisia solanacea.
75984 Embelia oblongifolia.
76187 Maesa permollis.
76220 Ardisia depressa.
76222 Ardisia villosa.
76349 Ardisia solanacea.
76408 Embelia parviflora.
76418 Maesa permollis.
76419 Maesa montana.
76480 Ardisia arborescens.
76583 Ardisia arborescens.
76603 Ardisia maculosa.
76706 Ardisia solanacea.
76773 Maesa permollis.
76850 Ardisia corymbifera.
76853 Ardisia crenata.
76879 Embelia parviflora.
76886 Embelia oblongifolia.
76945 Maesa montana.
77000 Maesa tenera.
77090 Maesa permollis.
77151 Maesa montana.
77289 Ardisia yunnanensis.
77372 Embelia subcoriacea.
77402 Rapanea neriifolia var. *yunnanensis.*
77463 Ardisia depressa.
77504 Embelia oblongifolia.
77512 Maesa ramentacea.
77517 Ardisia depressa.
77579 Maesa ramentacea.
77655 Ardisia solanacea.
77839 Ardisia villosa.
78053 Maesa montana.
78134 Ardisia maculosa.
78213 Ardisia virens.
78264 Embelia ribes.
78288 Ardisia yunnanensis.
78381 Embelia parviflora.
78391 Ardisia corymbifera.

WANG, C. W.—Continued.
78635 Ardisia depressa.
78638 Maesa ramentacea.
78733 Maesa ramentacea.
79143 Ardisia virens.
79224 Ardisia depressa.
79317 Maesa montana.
79355 Ardisia virens.
79416 Ardisia depressa.
79573 Ardisia solanacea.
79700 Ardisia depressa.
79739 Maesa permollis.
80308 Ardisia virens.
80316 Maesa montana.
80334 Ardisia villosa.
80600 Ardisia villosa.
80667 Embelia oblongifolia.
80697 Ardisia depressa.
80828 Ardisia depressa.
80836 Embelia oblongifolia.
80966 Ardisia solanacea.
81025 Embelia oblongifolia.
81211 Ardisia villosa.

WANG, F. T.
20435 Myrsine semiserrata.
20436 Myrsine semiserrata.
20505 Myrsine semiserrata.
22622 Myrsine semiserrata.
22727 Maesa montana.
23133a Ardisia crispa.
23172 Myrsine semiserrata.
23660 Myrsine semiserrata.
23661 Myrsine semiserrata.

WANG, K. T. (Sun Yatsen University.)
485 Ardisia brunnescens.

WANG, TE-HUI. *See* H. Handel-Mazzetti.

WANG, Y. C.
5024 Ardisia elegans.
5216 Ardisia Fordii.
5329 Ardisia chinensis.

WANG, Y. K.
347 Maesa perlarius.
353 Embelia ribes.
361 Ardisia crenata.
393 Embelia laeta.
423 Maesa japonica.
425 Ardisia quinquegona.

WANG, Y. K.—Continued..
427 Maesa perlarius.
508 Rapanea neriifolia.
519 Rapanea neriifolia.
538 Embelia parviflora.
1810 Embelia laeta.
1811 Maesa tenera.
1814 Ardisia mamillata.
1856 Embelia ribes.
1860 Embelia oblongifolia.
3207 Embelia longifolia.

WARBURG, O.
5770 Rapanea neriifolia.
5772 Ardisia quinquegona.
5774 Ardisia crenata (at Arn. Arb.).
5774 Ardisia punctata (at Vienna).
5776 Maesa japonica.
9393 Maesa japonica (at Kew).
9393 Maesa tenera (at Vienna).

WILFORD.
131 Maesa tenera.
148 Ardisia primulifolia.
212 Maesa perlarius.
352 Rapanea neriifolia.
426 Ardisia quinquegona.

WILSON, E. H.—Veitch Expedition.
145 Myrsine africana.
163 Myrsine semiserrata.
414 Ardisia crispa.
772 Maesa hupehensis.
1992 Ardisia Faberi.
2430 Ardisia japonica.
4056 Ardisia crispa (in part).
4056 Ardisia crenata (in part).
4057 Maesa hupehensis.
4059 Maesa montana.
4905 Maesa hupehensis.
4905a Maesa hupehensis.
5062 Ardisia crispa.
5063 Ardisia japonica.

Wilson, E. H.—Arnold Arboretum Expedition.
458 Ardisia crispa.
670 Ardisia japonica.
764 Maesa hupehensis, TYPE.
1980 Ardisia crispa var. *Dielsii.*
1981 Ardisia crispa.
3091 Myrsine semiserrata.

WILSON, ETC.—Continued.
3257 Maesa montana.
3258 Maesa hupehensis.
3297 Myrsine semiserrata.
3298 Myrsine africana.
4605 Myrsine semiserrata.
6043 Ardisia crenata.
6044 Ardisia crenata.
6047 Maesa japonica.
6048 Ardisia pusilla.
6049 Ardisia Sieboldii.
6054 Ardisia crenata.
6059 Ardisia crispa.
6077 Rapanea neriifolia.
6088 Rapanea neriifolia.
6094 Ardisia crispa.
6119 Ardisia Sieboldii.
6138 Maesa tenera.
6178 Ardisia japonica.
6210 Ardisia crenata.
6312 Maesa japonica.
6560 Maesa japonica.
7054 Ardisia japonica.
7816 Ardisia japonica.
8038 Maesa tenera.
8039 Ardisia Sieboldii.
8074 Rapanea neriifolia.
8087 Maesa tenera.
8122 Maesa tenera.
8269 Rapanea Maximowiczii.
8326 Ardisia Sieboldii.
8345 Rapanea Maximowiczii.
8386 Rapanea neriifolia.
8546 Ardisia japonica.
9380 Ardisia crenata.
9492 Ardisia crenata.
9536 Ardisia japonica.
9545 Ardisia pusilla.
9556 Ardisia japonica.
9696 Ardisia crenata.
9791 Maesa tenera.
9811 Myrsine marginata.
9918 Maesa tenera.
9942 Maesa japonica.
9944 Maesa japonica.
10116 Ardisia Sieboldii.
10138 Ardisia virens.
10141 Rapanea neriifolia.
10142 Maesa japonica.
10241 Ardisia quinquegona.

WILSON, ETC.—Continued.
10313 Ardisia brevicaulis.
10865 Embelia lenticellata.
11047 Maesa tenera.
11203 Embelia rudis.

WONG, KAM-CHOW. *See* Canton Christian College.

WRIGHT, C.[76]
185 Maesa tenera.
186 Rapanea Maximowiczii.
187 Ardisia quinquegona.
188 Ardisia Sieboldii.
199 Maesa perlarius.
200 Maesa japonica.
201 Maesa perlarius.
202 Embelia ribes.
203 Embelia laeta.
204 Rapanea neriifolia.
205 Ardisia quinquegona.
206 Ardisia elegans (at Gray Herb.).
206 Ardisia crenata (at U. S. Nat. Herb.).
207 Ardisia crenata.
208 Ardisia primulifolia.
485 Ardisia punctata.

WU-HAN UNIVERSITY, HERBARIUM OF THE NATIONAL.
285 (*Chow, Hó-Ch'ang*) *Maesa japonica.*
303 (*H. H. Chung & S. C. Sun*) *Ardisia crispa.*
415 (*H. H. Chung & S. C. Sun*) *Ardisia japonica.*
495 (*H. H. Chung & S. C. Sun*) *Ardisia crispa.*

WU-HAN, ETC.—Continued.
542 (*Chow, Ho-Ch'ang*) *Myrsine semiserrata.*
631 (*Chow, Ho-Ch'ang*) *Ardisia crispa.*
687 (*Chow, Ho-Ch'ang*) *Ardisia Faberi.*
719 (*Chow, Ho-Ch'ang*) *Ardisia japonia.*
1463 (*S. C. Sun*) *Ardisia crispa.*
1531 (*Chow, Ho-Ch'ang*) *Myrsine africana.*
1657 (*Chow, Ho-Ch'ang*) *Myrsine africana.*
1752 (*Chow, Ho-Ch'ang*) *Ardisia japonica.*
1758 (*Chow, Ho-Ch'ang*) *Ardisia brevicaulis.*
1788 (*Chow, Ho-Ch'ang*) *Myrsine semiserrata.*
1794 (*Chow, Ho-Ch'ang*) *Maesa japonica.*
1884 (*Chow, Ho-Ch'ang*) *Ardisia japonica.*
1973 (*Chow, Ho-Ch'ang*) *Ardisia crenata.*

YÜ, T. T.
246 Maesa montana.
255 Myrsine semiserrata.
290 Myrsine semiserrata.
548 Myrsine semiserrata.
5811 Myrsine africana.
7351 Myrsine africana.
10906 Myrsine semiserrata.
14124 Myrsine africana.

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[76] There is much confusion in the numbering of Wright's collections. These numbers apply only to the specimens collected on the Ringgold and Rodgers expedition to Japan and Hongkong in 1853–1856, and were apparently given after the specimens were received at the Gray Herbarium.

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CORRECTION

The name used for the species described on page 187 as *Myrsine marginata* Mez is invalid because of *Myrsine marginata* Hook. & Arn. described in 1834, although this earlier name is considered a synonym of *Chrysophyllum marginatum* Radlk. Hence *Myrsine marginata* Mez must be replaced by **MYRSINE STOLONIFERA Walker comb. nov.**, based on *Anamtia stolonifera* Koidzumi.

ILLUSTRATIONS

TEXT FIGURES

FIG. 1. *Maesa argentea* Wallich. *a*, branchlet with fruiting inflorescences, × ⅔; *b*, fruit, × 1½. Drawn from *Forrest 15974* (*K*).

2. *Maesa salicifolia* Walker. *a*, branchlet with inflorescences, × ⅔; *b*, flower with corolla removed, × 6; *c*, corolla, opened, with stamens, × 6. Drawn from the type, *C. C. C. 45* (*Y*).

3. *Maesa macilenta* Walker. *a*, branchlet with inflorescences, × ½; *b*, flower, × 10. Drawn from the type, *Henry 11704* (*W*).

4. *Maesa insignis* Chun. *a*, branchlet with fruiting inflorescences, × ½; *b*, fruit with adherent calyx and dried corolla, × 4. Drawn from the type, *Y. Tsiang 4405* (*V*).

5. *Maesa rugosa* C. B. Clarke. *a*, branchlet with inflorescences, × ½; *b*, portion of lower surface of leaf, × 1; *c*, corolla with stamens, × 10; *d*, opened calyx, viewed from below, showing bracteoles, × 10. Drawn from *Forrest 16564* (*A*).

6. *Maesa indica* (Roxb.) Wallich. *a*, branchlet with inflorescences, × ⅔; *b*, whole flower, × 7½; *c*, corolla with stamens, × 7½; *d*, flower with corolla removed, × 7½. Drawn from *Henry 10416A* (*W*).

7. *Ardisia retroflexa* Walker sp. nov. *a*, branchlet with inflorescences, × ½; *b*, calyx and pistil, × 5; *c*, stamen, back view, × 5; *d*, corolla and stamens, × 5; *e*, fruit, × 5. Parts *a* to *d* drawn from the type, *S. K. Lau 26302* (*W*); part *e* drawn from *C. C. C. 1815* (*W*).

8. *Ardisia stellata* Walker. *a*, branchlet with fruiting inflorescences, × ½; *b*, flower, viewed from below, × 5; *c*, flower, viewed from above, × 5; *d*, stellate hairs, × 25; *e*, fruit, × 5. Drawn from the type, *Henry 13226* (*W*).

9. *Ardisia brunnescens* Walker. *a*, branchlet with inflorescences, × ½; *b*, flower, × 3; *c*, fruit, × 3. Drawn from the type, *Morse 708* (*Y*).

10. *Ardisia porifera* Walker sp. nov. *a*, whole plant with inflorescences, × ½; *b*, immature fruit, × 5. Drawn from the type, *S. K. Lau 27467* (*W*).

11. *Ardisia salicifolia* Walker. a, branchlet with inflorescences, × ½; *b*, flower with corolla removed, × 5; *c*, corolla, × 5; *d*, stamen, side view, × 5. Drawn from the type, *Henry 11032* (*W*).

12. *a* to *c*, *Ardisia quinquegona* Blume. *a*, branchlet with inflorescences, × ⅔; *b*, fruit, × 10; *c*, flower, × 10. *d*, *A. quinquegona* var. *hainanensis* Walker var. nov.; sepals and pistil, × 10. *e*, *A. quinquegona* var. *oblonga* Walker var. nov.; sepals and immature fruit, × 10. Parts *a* and *c* drawn from *C. C. C. 757*

(*W*); part *b*, from *T. Tanaka and Y. Shimada* (*Taikoku Imp. Univ. 11155*) (*W*); part *d* from *C. C. C. 18098* (*Y*); part *e* from *C. Wang 34215* (*W*).

FIG. 13. *Ardisia cornudentata* Mez. *a*, branchlet with inflorescences, × ½; *b*, flower bud, × 5; *c*, stamen, × 5. Drawn from a type collection, *Henry 1074A* (*A*).

14. *Ardisia crassinervosa* Walker sp. nov. *a*, branchlet with inflorescences, × 1; *b*, sepals, × 5; *c*, portion of corolla with stamens, × 5; *d*, pistil, × 5; *e*, stamen, back view, × 5; *f*, fruit with sepals, × 5. Parts *a* to *e* drawn from *Hongkong Bot. Gard., Herb. 2246* (*A*); part *f* from the type, *C. C. C. 17423* (*W*).

15. *Ardisia villosa* var. *latifolia* Walker var. nov. Whole plant with inflorescences, × ½. Drawn from the type, *H. Y. Liang 70012* (*W*).

16. *Ardisia villosa* var. *oblanceolata* Walker var. nov. Whole plant with inflorescences, × ½. Drawn from the type, *N. K. Chun* and *C. L. Tso 43786* (*W*).

17. *Ardisia villosoides* Walker sp. nov. *a*, whole plant, × ½; *b*, sepals and very immature fruit, × 5; *c*, petal and stamen, × 5; *d*, stamen, back view, × 5; *e*, pistil, × 5. Drawn from the type, *F. C. How 72747* (*W*).

18. *Ardisia punctata* Lindley. *a*, upper part of plant with inflorescences, × ½; *b*, sepals with pistil, × 5; *c*, stamen, back view, × 5; *d*, corolla and stamens, × 5. Drawn from *Y. Tsiang 606* (*A*).

19. *Ardisia conspersa* Walker. *a*, special flowering branch, × ½; *b*, flower without corolla, × 5; *c*, corolla, × 5; *d*, stamen, back view, × 5. Part *a* drawn from a type collection, *Henry 10779* (*A*); parts *b* to *d* from *H. T. Tsai 60521* (*W*).

20. *Ardisia bicolor* Walker sp. nov. *a*, whole plant, × ½; *b*, calyx, × 5. *Drawn* from the type, *Steward, Chiao, & Cheo 155* (*A*).

21. *a* to *d*, *Ardisia crispa* (Thunb.) A. DeCandolle. *a*, whole plant with inflorescences, × ⅓; *b*, corolla and stamens, × 3⅓; *c*, stamen, back view, × 3⅓; *d*, sepals and pistil, × 3⅓. *e*, *Ardisia crispa* var. *Dielsii* (Léveillé) Walker; upper part of plant with inflorescences, × ⅓. Part *a* drawn from *Henry 3455* (*A*); parts *b* to *d* from *Henry 6365* (*W*); part *e* from *Henry 13279* (*W*).

22. *Ardisia crispa* var. *amplifolia* Walker var. nov. *a*, branchlet with fruiting inflorescences, × ⅓; *b*, fruit, × 3⅓. Drawn from a type collection, *Henry 9653* (*A*).

23. *Ardisia ensifolia* Walker sp. nov. *a*, upper part of plant with inflorescences, × ½; *b*, sepals and pistil, × 5; *c*, stamens, back view, × 5; *d*, petal and stamen, × 5. Drawn from the type, *S. K. Lau 28493* (*W*).

24. *Ardisia filiformis* Walker. *a*, branchlet with inflorescences, × ⅓; *b*, fruit, × 3⅓. Part *a* drawn from *W. T. Tsang 22393* (*A*); part *b* from the type, *Ching 8000* (*W*).

FIG. 25. *Ardisia olivacea* Walker sp. nov. *a*, branchlet with fruiting inflorescences, × ½; *b*, fruit, × 5. Drawn from the type, *S. P. Ko 56023* (*W*).

26. *Ardisia triflora* Hemsl. *a*, whole plant, × ½; *b*, calyx, × 10; *c*, pistil with partially dissected ovary, × 10; *d*, stamen, back view, × 10; *e*, petal and stamen, × 10. Drawn from *W. Y. Chun 6274* (*A*).

27. *Ardisia ordinata* Walker sp. nov. *a*, upper part of plant with inflorescences, × ½; *b*, very immature fruit and calyx, × 5. Drawn from the type, *S. K. Lau 27381* (*W*).

28. *Ardisia scalarinervis* Walker. *a*, branchlet with inflorescences, × ½; *b*, fruit, × 4; *c*, pistil, × 4; *d*, portion of corolla with stamens, × 4. Drawn from the type, *Henry 12021* (*W*).

29. *Ardisia Silvestris* Pitard. *a*, whole plant, × ⅓; *b*, calyx and pistil, × 5; *c*, corolla and stamens, × 5; *d*, stamen, back view, × 5. Part *a* drawn from *F. C. How 72037* (*W*); parts *b* to *d* from *Petelot 4381* (*W*), from Indo-China.

30. *Ardisia replicata* Walker. *a*, whole plant, × ½; *b*, fruit, × 5; *c*, portion of under surface of leaf, × 5. Drawn from the type, *Henry 11444* (*W*).

31. *Ardisia pubivenula* Walker sp. nov. *a*, whole plant, × ½; *b*, fruit, × 5. Drawn from the type, *F. C. How 73665* (*W*).

32. *Embelia aberrans* Walker. *a*, branchlet with inflorescences, × ½; *b*, very immature fruit, partially dissected, × 7½; *c*, inflorescence, × 1½. Drawn from the type, *H. T. Tsai 61555* (*W*).

33. *Embelia Henryi* Walker. *a*, branch with inflorescences, × 1; *b*, portion of corolla of female flower, showing attached stamens, × 8; *c*, pistil with sepals, × 8. Drawn from the type, *Henry 10913* (*A*).

34. *a*, *Embelia pauciflora* Diels; branchlet with immature inflorescences, × ½. *b* to *d*, *Embelia pauciflora* var. *Blinii* (Léveillé) Walker. *b*, branchlet with inflorescences, × ½; *c*, flower, × 5; *d*, petal and stamen, × 5. Part *a* drawn from a photograph of the type, *Rosthorn 25;* parts *b* to *d* from a fragment of the type, *Bodinier* (*Chaffanjon*) *2081*.

35. *Myrsine elliptica* Walker sp. nov. *a*, branchlet with inflorescences, × ½; *b*, flower, × 5. Drawn from the type, *C. Wang 39429* (*W*).

36. *Rapanea Faberi* Mez. *a*, branchlet with fruiting inflorescences, × ½; *b*, fruit, × 5. Drawn from a type collection, *Faber 132* (*Y*).

37. *Rapanea kwangsiensis* Walker. Portion of branch with leaf and fruiting inflorescences, × 1. Drawn from the type, *Ching 6657* (*W*).

INDEX

[Principal references are printed in **boldface**, synonyms in *italics*.]

A

Acknowledgments, 10.
Acrardisia, 49, 50, 60.
Aegiceraceæ, 6.
Aegiceras Gaertn., 5–7, 11, 47.
corniculata Blco., *47*.
corniculata (Linn.) Blco., **47**, 211, 213, 223, 224, 237, 238.
majus Gaertn., *47*.
Anomantia Koidz., *184*.
Alangiaceæ, 154.
Alangium faberi var. perforatum (Lev.) Rehd., 154.
Anamtia Koidz., *184*.
marginata Masamune, *188*.
Mezii Masamune, *188*.
stolonifera Koidz., 184, *187*, 188.
Apocynaceæ, 46.
Aquifoliaceæ, 183, 184.
Ardisia Sw., 3, 4, 6, 7, 12, 48, 49, 50, 115, 184; excluded species, of, 154; important specimens not determined, 154; key to the eastern Asiatic sections of, 49; key to the eastern Asiatic species of, 50; uncertain species of, 148.
affinis Blm., 195, 197.
affinis Hemsl., 53, 99, 210, 212, 216, 220, 224, 231, 236–240.
arborescens Wall., 50, 57, 80, 222, 238, 241.
bicolor Walk. sp. nov., 55, 115, 116, 215, 281.
Bodinieri Lev., *105*.
brevicaulis Diels, 53–55, 105, 207, 214, 215, 220, 226, 227, 231, 232, 235, 237, 238, 243.
brunnescens Walk., 51, 68, 69, 228, 241.
castaneifolia Lev., *133*, 134.
caudata Hemsl., 53–55, 108, 109, 215, 221, 222, 224, 233, 238.
Cavaleriei Lev., *133*, 134.
chinensis Benth., 50, 55, 129, 208–210, 212, 214, 216, 220, 225, 231, 236, 239, 241.
citrifolia Hay., 148.
colorata Roxb., 62.
conspersa Walk., 53, 106, 107, 108, 221, 235.
cornudentata Mez, 49, 50, 52, 84, 85, 151–153, 216, 219–221, 231, 232.
corymbifera Mez, 53, 55, 100, 108, 222, 231, 233–235, 238, 241.

Ardisia—Continued.
crassinervosa Walk. sp. nov., 52, 86, 89, 209, 211, 220, 222, 223, 225–227.
crenata Roxb., 112.
crenata Sims, 3, 54, 55, 104, 111, 112, 115, 117, 118, 121, 150–153, 155, 207–226, 228–237, 239–243.
crenulata Lodd., *112*.
crispa A. DC., 115.
crispa (Thunb.) A. DC., 54, 104, 111, 112, 115, 118, 119, 148, 150, 152, 213, 215, 216, 220, 221, 227–232, 236, 237, 241–243.
crispa var. *elegans* A. DC., *110*.
crispa var. amplifolia Walk., 54, 121, 129, 233.
crispa var. Dielsii (Lev.) Walk., 54, 121.
crispa var. *Dielsii* Walk., 119, *122*, 207, 215, 220, 222, 227, 231, 232, 236–240, 242.
crispa var. *Taquetii* Lev., *112*.
crispata Hay., 148.
densilepidotula Merr., 51, 63, 210, 211, 213, 219, 223–227, 239.
depressa C. B. Clarke, 52, 78, 81, 154, 155, 212, 221, 222, 231, 233–235, 241.
Dielsii Lev., 121, 122.
discolor Lev., 154.
dumetosa Tutch., *90*.
elegans Andr., 55, 110, 111, 112, 207, 209–213, 217, 219, 220, 222–229, 231, 232, 236, 238, 239, 241, 243.
elegantissima Lev., *110*.
elliptica Thunb., 5.
ensifolia Walk. sp. nov., 54, 124, 125, 226.
esquirolii Lev., 154.
Faberi Hemsl., 56, 133, 211, 212, 215, 216, 221, 227, 232, 233, 236, 242, 243.
filiformis Walk., 54, 126, 212, 224, 231, 236.
floribunda Roem. & Schult., 64.
floribunda Wall., 64.
Fordii Hemsl., 52, 81, *134*, 210, 216, 222, 226, 227, 235, 236, 241.
formosana Rolfe, *79*.
gigantifolia Stapf, 56, 140, 144, 209–212, 223, 225, 233, 236, 239.
glabra A. DC., 148.
hainanensis Mez, 59, 152.
Hanceana Mez, 54, 117, 207, 208, 212, 213, 223, 225, 218, 231, 235.
Henryi Hemsl., *118*, 119.

Ardisia—Continued.
Henryi var. *Dielsii* Walk., *122.*
hortorum Maxim., *118*, 152, 153.
hortorum var. *brachysepala* Hand-Mazz., *122.*
humilis Vahl, 5, 50, **59**, 152, 213, 219, 222, 223, 225–227, 238, 239.
japonica Blm., 3, 56, *135.*
japonica (Hornsted) Blm., **134**, 148, 149, 207, 208, 211–216, 220, 221, 223, 224, 227–232, 236, 238, 239, 242, 243.
japonica var. *angusta* Makino & Nemoto, 56, *137.*
japonica var. **angusta** (Nakai) Makino & Nemoto, **136**, 227.
japonica var. montana Miq., **148**, 149.
japonica var. montana (Sieb.) Miq., 136.
konishii Hay., 110, 112.
kotoensis Hay., **149.**
kusukusensis Hay., **149.**
Labordei Lev., *112.*
lanceolata Roxb., 58.
lentiginosa J. B. Ker, *112.*
maclurei Merr., 56, **139**, 208, 209, 223, 226, 239.
macrocarpa Wall., **149**, 150, 220.
maculosa Mez, 55, **122**, 221, 222, 227, 230, 233–235, 241.
mairei Lev., **154.**
mamillata Hance, 51, 53, 56, **97**, 208–213, 215, 216, 220, 223–225, 231, 232, 235–240, 242.
Meziana Lev., *80.*
montana Sieb., *148*, 149.
morrisonensis Hay., *84.*
mouretii Pitard, **150**, 215.
neriifolia Wall., 64.
nervosa Walk. sp. nov., 52, **88**, 213, 226, 239.
nigropilosa Pitard, 65.
obtusa Mez, 51, **67**, 209, 212, 219, 221, 223–229, 239.
odontophylla Wall., *135*, 139, 140, 148, 155.
Oldhami Mez, *82.*
olivacea Walk. sp. nov. 54, **127**, 128, 224.
ordinata Walk sp. nov. 56, **137**, 138, 139, 148, 226.
pachyphylla Dunn, *67*, 68.
patens Mez, **122**, 123.
patens var. tonkinensis Pitard, **151.**
pauciflora B. Heyne, *73.*
penduliflora Mez, *119.*
pentagona A. DC., *73.*
perforata Lev., **154.**
porifera Walk. sp. nov., 51, **70**, 71, 213, 226.
primulifolia Gardn. & Champ., 4, 49, 50, 53, **98**, 207–210, 212–214, 220, 223–225, 227, 228, 231, 235, 236, 238–240, 242, 243.
pseudoverticillata Merr., *141.*

Ardisia—Continued.
pubivenula Walk. sp. nov., 57, 139, **146**, 147, 227.
punctata Lindl., 53, 55, **102**, 103, 104, 114, 148, 206–214, 216, 218–220, 222, 224–228, 231, 235–238, 240, 242, 243.
punctata var. **latifolia** Walk., 53, **105**, 224, 239.
pusilla A. DC., 56, **132**, 134, 149, 153, 208, 209, 214–216, 220, 223, 224, 228, 231, 232, 236, **240.**
Pyrgus Roem. & Schult., *59.*
quinquegona Blm., 51, 52, **73**, 74, 78–82, 154, 155, 207–216, 219, 220, 223–226, 228, 229, 231, 232, 235–239, 241–243.
quinquegona var. **hainanensis** Walk. var. nov., 51, 52, 74, **76**, 78, 79, 208, 209, 211, 219, 236.
quinquegona var. **oblonga** Walk. var. nov., 51, 74, **77**, 78, 209, 220, 223, 225, 227, 239.
racemosa Mez, *59.*
radians Hemsl. & Mez. *82.*
radicans, 82.
rectangularis Hay., **151.**
remotiserrata Hay., **151**, 153.
replicata Walk., **57**, **144**, 145, **148**, **222**, 235.
reptans Merr., *132.*
reptans Mez, *132.*
retroflexa Walk. sp. nov., 50, 60, 61, 211, 225.
rhynchotechioides (Kränzl) Hand.-Mazz., **151.**
rigida Kurz, **151.**
roseiflora Pitard, 55, **101**, 237.
salicifolia Walk., 51, **72**, 221, 222.
scalarinervis Walk., 56, **140**, 222.
Shweliensis W. W. Sm., 54, **123**, 217.
Sieboldii Miq., 52, **79**, 80, 212, 214, 216, 218–221, 224, 229, 231, 232, 242, 243.
Silvestris Pitard, 56, **142**, 143, 223.
simplicicaulis Hay., **152.**
sinensis Hort, **152.**
solanacea Roxb., 50, **58**, 59, 218, 221, 222, 230, 233, 234, 241.
stellata Walk., 51, **65**, 66, 222.
stenosepala Hay., **152**, 155, 216.
suishaensis Hay., **152**, 153.
Tachiba, 153.
Tachibana Makino, **153.**
Taquetii Lev., *112.*
tenera Mez, 52, **80**, 211, 221, 222, 228.
thyrsiflora D. Don, **64.**
tinifolia Sw., 49.
trichocarpa Merr., *90.*
triflora Hemsl., 50, **55**, **129**, 130, 131, 214, 216, 227.
tuflora Hemsl., 130.
undulata C. B. Clarke, 106, 108.
undulata Mez, *106.*
velutina Pitard, **155.**
vestita Wall., *90*, 91.
villosa Mez, *132.*

Ardisia—Continued.
villosa Roxb., 53, 90, 91, 93, 96, 132, 211, 221–223, 225, 226, 231, 236, 237, 239, 241.
villosa var. **ambovestita** var. nov., 53, 91, 208, 209, 213, 239.
villosa var. **latifolia** Walk. var. nov., 53, 92, 93, 227.
villosa (Thunb.) Mez var. **liukiuensis** (Nakai) Makino & Nemoto, 153.
villosa var. **oblanceolata** Walk. var. nov., 53, 93, 94, 213, 223, 225, 226.
villosoides Walk. sp. nov., 53, 93, 95, 213, 223.
violacea Susuki-Tokyo, 153.
virens Kurz, 52, 55, 82, 84, 207, 216, 217, 219–222, 224, 228, 229, 232–235, 241, 242.
yunnanensis Mez, 51, 64, 155, 222, 232, 240, 241.
sp., 210, 211, 223, 227, 238.
Ardisiaceæ, 2.
Ardisieæ, 7, 11.
Athruphyllum Lour., *194.*
lineare Lour., 194, *200.*

B

Bacobotrys J. & G. Forst., *12*, 15.
argentea Wall., *14*, 15.
indica Roxb., *40.*
nemoralis J. & G. Forst., 12.
ramentacea Roxb., *33.*
(Maesa) argentea Wall., 15.
Bladhia Hornsted, 3, 4, *48*, 49, 50, 55, 100, 153.
Bladhia Thunb., *48.*
Bladhia (Thunb,) Mez, /129.
chinensis Nakai, *129.*
citrifolia Nakai, *148.*
cornudentata Nakai, *84.*
crispa Thunb., 3, 112, 115, 118, 150, 153.
crispa var. *Taquetii* Nakai, *112.*
crispa var. Taquetii Lev., 151.
elegans Koidz., *110.*
glabra Thunb., *148.*
japonica Hornsted, 48, *134*, 135.
japonica Thunb., 3.
japonica var. *angusta* Nakai, *136.*
kotoensis Nakai, *149.*
lentiginosa Nakai, *112.*
lentiginosa var. *Taquetii* Nakai, 112.
montana Nakai, *149.*
Morrisonensis Nakai, *84.*
punctata Nakai, *102.*
quinquegona Nakai, *73.*
Sieboldii Nakai, *79.*
villosa Thunb., *132*, 153.
villosa var. **Liukiuensis** Nakai, 153.
violacea Susuki-Tokyo, *153.*
[Bladhia] japonica, 149.
Bobua glauca Nakai, 193.
Buxaceæ, 194.

C

Calispermum Lour., *155.*
scandens Lour., 155, *163.*
Celastraceæ, 184, 194.
Celastrus Cavaleriei Lev., 190.
gemmata Loesn., 184.
Seguini Lev., *191.*
stylosa Wall., 190.
Chloranthaceæ, 154.
Chloranthus brachystachyus Blm., 154.
glaber Makino, 148.
Choripetalum A. DC., 155.
aurantiacum A. DC., 155.
Benthamii Hance, *181.*
obovatum Benth., *181.*
Chrysophyllum Augustini Nakai, 44.
Conandron rhychotechioides Kranzl., 151.
Cornaceæ, 154.
Cornus oblonga Wall., 154.
Crispardisia Mez, 4, 49, 50, 52, 56, 65, 82, 100, 127, 149, 150, 155.

D

Dartus Lour., *12.*
perlarius Lour., 12, *24*, 26.
Distylium strictum Hemsl., 193, 207.
Doraena Thunb., *12.*
japonica Thunb., 12, *19.*

E

Embelia Burm. f., 4–7, 12, 155, 171; excluded species of, 183; important specimen not determined, 184; key to the eastern Asiatic species of, 156; uncertain species of, 182.
Embelia Clarke, 158.
aberrans Walk., 157, 169, 170, 235.
Blinii Lev., *178.*
Bodinieri Lev., *167.*
Cavaleriei Lev., 183.
Dielsii Lev., *178.*
esquirolii Lev., 183.
floribunda Wall., 156, 160, 217, 218, 230, 233, 234.
Fordii (Hemsl.) Mez, 184.
Fordii Mez, *81*, 184.
Gamblei Kurz, 156, 162, 184, 218, 230, 233.
hainanensis Merr., *163.*
henryi Walk., 157, 175, 221.
kaopoensis Lev., *178.*
laeta (Linn.) Mez, 157, 180, 181, 207–214, 220, 223–226, 229, 235–239, 241–243.
laeta Mez, *183.*
lenticellata Hay., 157, 168, 217, 243.
longifolia (Benth.) Hemsl., 157, 178, 183, 208–211, 214, 216, 220, 223, 225, 227, 232, 236, 238–240, 242.
longifolia Hemsl., *179.*
myrtifolia Hemsl. & Mez, *171.*
nagushia D. Don var. *subcoriacea* C. B. Clarke, *180.*

Embelia Clarke—Continued.
oblongifolia Hemsl., 157, 165, **167**, 183, 208–210, 212–215, 221–227, 229–242.
obovata Hemsl., *181*.
parviflora Wall., 4, 157, **171**, 208–210, 212, 214, 220–222, 224–227, 229–231, 233–236, 239–242.
pauciflora Diels, 157, **176**, 177, 207, 237, 238.
pauciflora var. **Blinii** (Lev.) Walk., 157, 177, **178**, 207, 211.
pauciflora var. *Blinii* Walk., *178*.
penduliramula Hay., 182, 183.
polypodioides Hemsl., 4, 157, **173**, 221, 232, 233.
procumbens Hemsl., 157, **174**, 215, 221, 238.
prunifolia Mez, *165*.
ribes Burm. *f.*, 155, 156, **159**, 207–214, 217–229, 231, 233–239, 241–243.
rubrinervis Lev., **184**.
rubro-violacea Lev., **184**.
rudis Hand.-Mazz., 156, **164**, 207–214, 216, 219, 220, 223–225, 228, 231, 235–237, 239, 240, 243.
saxatilis Hemsl., *174*.
scandens (Lour.) Mazz., 156, **163**, 208, 212, 213, 225, 226, 236, 238.
scandens Mez, *163*.
Schlechteri Lev., *176*.
sessiliflora Kurz, 4, 156, **158**, 217, 222, 230, 234, 238, 240, 241.
subcoriacea (C. B. Clarke) Mez, 157, **180**, 183, 217, 218, 221, 224, 227, 232–234, 238, 240, 241.
subcoriacea Mez, *180*.
undulata Mez, **183**.
valbrayi Lev., **184**.
vanioti Lev., **184**.
vestita Roxb., 157, **165**, 166, 217, 218, 221, 230, 232, 238.
viridiflora (A. DC.) Scheff., **183**.
Embeliopsis Mez, 156, **160**.
Ericaceæ, 184.
Enembelia, 156, **158**.
Eurya Cavaleriei Lev., 46.
nitida Korth., 206.

F

Fanna tadsi banna, 3.

G

Gaultheria yunnanensis (Franch.) Rehd., 184.

H

Heterembelia, 156, **161**.
Hamamelidaceæ, 193, 207.

I

Ilex, 46.
metabaptista var. myrsinoides (Lev.) Rehd., 46, 183, 194.
purpurea Hassk., 184.

J

Jamma tadsi banna, 3.

L

Laurus glauca Thunb., 193.
Lysimachia lancifolia Craib, 154.

M

Maesa Forsk., 5–7, 11, **12**, 15, 36, 44; excluded species of, 45; important undetermined specimens of, 46; key to the eastern Asiatic species of, 13; uncertain species of, 43.
acuminatissima Merr., 14, *32*, 208, 209, 211, 225–227, 229, 236, 239.
argentea A. DC., *15*.
argentea (Wall.) A. DC., 13, 14, 217, 218, 220, 230, 233, 234, 238.
argentea Wall., 15.
argentea var. **kwangsiensis** Hand., **43**.
augustini (Nakai) Tuyama, **44**.
aurea Lev., **45**.
Balansae Mez, 14, 39, 213, 224–228, 236, 239.
blinii Lev., **45**.
Bodinieri Lev. and Blin., **46**.
castaneifolia Mez, *29*.
Cavaleriei Lev., *19*.
Chisa D. Don. **46**.
consanguinea Merr., 14, **42**, 209, 211, 226, 239.
coriacea Champ., *19*.
depauperata Diels, **46**.
Doraena Blm., *19*.
Dunniana Lev., *19*.
elongata Mez, *29*.
Esquirolii Lev., *19*.
formosana Mez, *35*, 36, 45.
Henryi Hu, *29*.
hirsuta Walk., *24*.
hupehensis Rehd., 14, 22, **37**, 211, 215, 216, 221, 227, 228, 242.
indica A. DC., *40*.
indica (Roxb.) A. DC., 14, **34**, 36, 40, 44, 47, 220, 221, 232–235, 238.
indica (Roxb.) Wall., 40, 41.
indica var. *retusa* Hand.-Mazz., *32*.
insignis Chun, 13, *24*, **25**, **231–233**, **237–240**.
japonica Mor., *19*.
japonica (Thunb.) Mor., 13, **19**, 22, 23, 35, 45, 46, 194, 207–213, 215, 216, 219–233, 235–243.
japonica var. *elongata* Mez, *19*, **22**, *37*, **45**.
japonica var. **latifolia** Miq., **44**.
Labordei Lev., *19*.
lanceolata Forsk., 12.
lanceolata α **paniculata** var. **pyrifolia** (Miq.) Kze., **44**.
laxiflora Pitard, 14, 42, 220, 223, 226.
macilenta Walk., 13, *22*, 23, 222.
Martini Lev., *35*.

Maesa—Continued.
membranacea A. DC., 14, **38**, 43, 213, 223, 226, 227, 239.
mollis A. DC., **45**.
mollis Decne., **45**.
montana A. DC., 13, 14, **28**, 30, **34**, 36, 44, 46, 208, 215–217, 220–222, 227, 230–235, 238, 240–243.
myrsinoides Lev., **46**.
montana var. *elongata* A. DC., *29*.
parvifolia A. DC., 13, 28, 226.
perlarius (Lour.) Merr., 13, *24*, 28, 36, 207–214, 218, 219, 221–232, 235–239, 241–243.
perlarius Merr., *26*.
permollis Kurz, 13, *16*, 209, 218, 221, 222, 230, 235, 241.
permollis var. **effusa** Walk., 13, **17**, 217, 218.
ramentacea A. DC., *33*.
ramentacea (Roxb.) A. DC., 14, **33**, 212, 221, 222, 231, 233, 235, 236, 238, 241.
randaiensis Hay., **45**.
ramentacea (Roxb.) Wall., *33*.
rugosa C. B. Clarke, 14, *30*, 31, 218, 220, 240.
rugosa var. *Griffithii* C. B. Clarke, 30, 32.
salicifolia Walk., 13, **17**, 18, 22, 23, 207, 208, 210, 222, 226, 228.
scandens Lev., **46**.
sinensis A. DC., *26*, 27.
singuliflora Lev., **46**.
taiheizanensis Sasaki, **45**.
tenera Mez, 14, **26**, **34**, 36, 37, 44, 45, 207, 209, 211, 212, 214–217, 219, 223, 224, 226–229, 231, 232, 236–239, 241–243.
Wilsonii Rehd., *37*.
sp., 217, 218, 222, 227, 234.
Maesoidæ, 7.
Magnoliaceæ, 184.
Micrembelia Mez, 157, **169**, 171.
Microtropis fokienensis Dunn, 194.
Myrsinaceæ, eastern Asiatic, 1–8, 10, 11, 187, 193, 194; bibliography, 243; distribution, 6; explanation of citations, 8; general morphology, 4; historical review, 2; introduction, 1; key to the eastern Asiatic genera of, 11; list of cited specimens, 207; list of illustrations, 249; principal characters, 7; systematic position and subdivisions, 6.
Myrsine Linn., 4–7, 11, 12, 184, 185, 195; excluded species of, 193; key to the eastern Asiatic species of, 185; uncertain species of, 193.
affinis A. DC., *195*.
affinis (Blm.) A. DC., 195.
africana Linn., 4, 184, **185**, 189, 192, 207, 211, 212, 215–217, 219–221, 227–233, 237, 238, 240, 242, 243.
africana var. *bifaria* Franch., *186*.
ardisioides Hook. and Arn., **193**.
Myrsine—Continued.
bifaria Wall., *186*.
buxifolia Hance, **193**, 207.
capitellata Wall., *202*, 205.
Cavaleriei Lev., **193**, 194.
chaffanjoni Lev., **194**.
chevalieri Lev., **194**.
elliptica Walk. sp. nov., 184, 189, **192**, 239, 240.
Esquirolii Lev., 19, **194**.
feddei Lev., 194.
laeta A. DC., *181*.
linearis Poir., *200*.
marginata Mez, 184, 185, **187**, 188, 190, 192, 207, 209, 213, 215, 216, 219, 220, 227, 233, 235, 238, 239, 242, 247.
microphylla Hay., *186*.
neriifolia Mez, *202*.
Playfairii Hemsl., *200*.
semiserrata Wall., 6, 185, 188, **190**, **202**, 207, 211, 212, 215–218, 220–222, 225–227, 230–234, 236, 238, 240–243.
seguini Lev., *202*.
stolonifera Walk., 247.
thunbergii Tanaka, **193**.
undulata Wall., *183*.
vaccinifolia Hay., *186*.
Myrsineaceæ, 2.
Myrsineæ, 2, 7, 11.
Myrsinoideæ, 7.

P

Primulaceæ, 7, 154.
Pteris oligodonta Lev., *19*.
Pyrgus racemosa Lour., *59*.

Q

Quercus phillyreoides A. Gray, 46.

R

Rapanea Aubl., 4–7, 12, 185, **187**, **194**; excluded species of, 206; key to the eastern Asiatic species of, 195; uncertain species of, 206.
affinis (A. DC.) Mez, 196.
affinis (Blm.) **Mez**, **195**, 211, 213, 216, 225, 227.
affinis Mez, *195*.
aurea Lev., **206**.
buxifolia (Hance) Mez, **193**, **207**.
Faberi Mez, 195, **197**, 215, 218, 221, 223, 225, 229, 233, 234, 237, 239.
guianensis Aubl., 194.
kwangsiensis Walk., 195, **198**, 199, 212, 220, 224, 232.
linearis (Lour.) S. Moore, **195**, **200**, 202, 205, 213, 214, 219, 220, 223–227, 229, 237–239.
linearis S. Moore, *200*.
maximowiczii Koidz., 195, **201**, 206, 242, 243.
neriifolia (Sieb. & Zucc.) Mez, 195, 198, **202**, 206–209, 211–216, 219–227, 229, 231–233, 235–239, 242, 243.

Rapanea—Continued.
neriifolia Mez, 193, *202.*
neriifolia var. yunnanensis (Mez) Walk., 195, 205, 212, 217, 218, 220, 222, 222, 227, 230, 232–236, 238, 240, 241.
neriifolia var. *yunnanensis* Walk., *205.*
okabeana Tuyama, 206.
playfairii (Hemsl.) Mez, 205.
playfairii Mez, *200.*
stolonifera Nakai, *188.*
Walkeriana Hand.-Mazz., *202.*
yunnanensis Mez, *205*, 206.
Rhamnaceæ, 45, 184.
Rhamnella rubrinervis (Lev.) Rehd., 184.
Rhamnus Blinii (Lev.) Rehd., 45.
crenatus, 198.
myrtillus Lev., *186.*
Rhizophora, 47.
corniculata Linn., *47.*
Ribesiodes Kze., *155.*
Ribesiodes Linn., 155.
floribundum Kze., *160.*
Gamblei Kze., *162.*
longifolium Kze., *179.*
oblongifolium Kze., *167.*
obovatum Kze., *181.*
parviflorum Kze., *171.*
ribes Kze., 155, *159.*
sessiliflorum Kze., *158.*
vestitum Kze., *165.*

S

Sabia sp., 193.
Sabiaceæ, 193.
Samara Linn., *155.*
laeta Linn., 155, *181.*
longifolia Benth., *178.*
obovata Benth., *181.*
Sarcococca Hookeriana var. humilis Rehd., 194.
Schizandra propinqua Hook. f. and Thoms. var. sinensis Oliv., 184.
Symplocaceæ, 45.
Symplocos Bodinieri Brand, 45.
laurina (Retz.) Wall., 46.

T

Theaceæ, 206.
Theophrastaceæ, 7.
Theophrastus, 7.
Tinus Burm., *48.*
Tinus (Burm.) Mez, 49, 50, 57.
affinis Kze., *99.*
caudata Kze., *109.*
crispa Kze., *112.*
crispa var. *macrocarpa* Kze., *149.*
depressa Kze., *78.*
Faberi Kze., *133.*
Henryi Kze., *119.*
humilis Kze., *59.*
japonica Kze., *135.*
mamillata Kze., *97.*
montana Kze., *149.*
primulifolia Kze., *98.*
punctata Kze., *102.*
racemosa Kze., *59.*
Sieboldii Kze., *79.*
trifolia Kze., *130.*
virens Kze., *82.*
Trachelospermum axillare Hook. f., 46.

U

Umbraculum Rumpf., *47.*
corniculatum Kze., *47.*
corniculatum (Linn.) Kze., 47.

V

Vaccinium laetum Diels, 46.

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CONTENTS

	Page
WALKER, EGBERT H. A revision of the eastern Asiatic Myrsinaceæ	1

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